BSc (Hons.) in Sustainable Transport Management
TU814

STUDENT HANDBOOK 2021

School of Transport Engineering, Environment & Planning

February 2021

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Welcome to the BSc (Hons) in Sustainable Transport Management at TU Dublin

On behalf of all our colleagues, I would like to welcome you to the BSc (Hons) in Sustainable Transport Management. This four-year level 8 undergraduate honours degree programme is delivered by the TU Dublin School of Transport Engineering, Environment & Planning. The programme is the outcome of a root and branch review of the BSc (Hons) in Transport Operations and Technology programme (code: DT028). The BSc (Hons) in Sustainable Transport Management (code: TU814) supersedes that programme.

The programme is multi-disciplinary and delivered by an academic team drawn from a range of professional backgrounds in the transport sector and focuses on the management, operations and technology associated with the four modes of transport - road, rail, maritime and aviation.

We believe this is reflective of the integrated nature of contemporary challenges facing the transport industry. The programme is designed to be highly engaged with industry, encouraging current best practice and reflectiveness, and to facilitate research and innovation in the field of Sustainable Transport Management.

It is the aim of the programme to bring a more diverse and wider range of skills into the international transport sector and we hope this can be a very positive experience for all who attend. The programme provides learners with both a theoretical and practical framework but also a basis to develop knowledge and to critically reflect.

This handbook is intended to provide you with some guidance and structure to help you to begin the programme. If there are any questions not answered here please contact me directly at roisin.murray@TUDublin.ie.

On behalf of the Programme Team, I look forward to working together with you during your time studying on our BSc (Hons) in Sustainable Transport Management programme. We wish you well on your journey towards becoming a graduate ready for a career in the transport sector.

Roisin Murray

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1. The Academic Environment

1.1. Bachelor of Science (Hons) in Sustainable Transport Management

The Bachelor of Science (Hons.) in Sustainable Transport Management (TU Dublin Programme Code: TU814) is delivered by the School of Transport Engineering, Environment and Planning, within the Technological University Dublin College of Engineering and the Built Environment. The School is based within the TU Dublin City Campus and delivers a range of programmes in their respective disciplines from apprenticeship training up to PhD level.

The programme is the outcome of a review of the Bachelor of Science (Hons.) in Transport Operations and Technology programme (code: DT028/TU814).

1.2. Technological University Dublin

Technological University Dublin (TU Dublin) was established as an autonomous institution under the TU Dublin Act in 2019. Its origins go back to 1887 and the establishment of technical education in Ireland. It is a publicly funded, autonomous Higher Education Institution and is a member of the European University Association. The University is a comprehensive higher education institution, fulfilling a national and international role in providing full-time and part-time programmes across the whole spectrum of higher education, supported by research and scholarship. TU Dublin City Campus is made up of four Colleges:

- College of Engineering and Built Environment;
- College of Arts and Tourism;
- College of Business; and
- College of Sciences and Health.

TU Dublin grants awards at Higher Certificate, Ordinary Degree, Honours Degree, Masters and PhD levels. Honours Degrees are awarded with grades of Pass, Lower Second Class Honours, Upper Second Class Honours or First Class Honours. Ordinary Degrees are awarded with grades of Pass, Merit Lower Division, Merit Upper Division or Distinction. Higher Certificates are awarded with grades of Pass, Merit Lower Division, Merit Upper Division or Distinction.

Within the structure of the new National Framework of Qualifications, each award now has a specific level as follows:

- Doctorate Level 10;
- Master Degree Level 9;
- Honours Degrees Level 8;
- Ordinary Degrees Level 7;
- Advanced and Higher Certificates Level 6.

1.3 College of Engineering and the Built Environment

The TU Dublin City Campus College of Engineering and Built Environment comprises seven Schools formed around the range of disciplines in engineering and the built environment. The College has a current academic structure based around the following Schools:

- School of Transport Engineering, Environment & Planning;
- School of Architecture;
- School of Civil and Structural Engineering;
- School of Electrical and Electronic Engineering;
- School of Mechanical and Design Engineering;
- School of Multi-disciplinary Technologies;
- School of Surveying and Construction Management.

1.4. School of Transport Engineering, Environment & Planning

In 2012, the Department of Transport Engineering merged with the School of Spatial Planning to form a new School of Transport Engineering, Environment & Planning. The vision of the School is to develop, promote and optimise the physical, social, technical and cultural elements of transport and the environment through the provision of life-long learning initiatives. Its aim is to equip students with the knowledge, skills and tools to effectively plan and manage transport and the environment.

We provide a range of programmes across the transport, automotive and aviation disciplines, which are internationally recognised. We also provide innovative and career focused education in the area of sustainable development, environmental management, local economic and community development, and planning and regeneration.

Our programmes offer graduates access to rewarding career paths and equip them to meet the challenges and demands of an ever-changing sector. We provide recognised undergraduate and postgraduate programmes, which are tailored to professional careers, and we are active in research and civic engagement.

1.5. TU Dublin and the Grangegorman Project

The National Strategy for Higher Education, published in January 2011, included a new type of university for Ireland – a Technological University. Three institutions in the Dublin region with a combined

population of 29,000 students – DIT, ITB and ITT - have come together to explore the benefits of structured cooperation and collaboration and have jointly been designated as a new unitary university, providing educational opportunities that are practice-based and research-informed. DIT, ITB and ITT established a formal alliance in October 2011 and since then colleagues from the three institutions have been working together to develop a programme of work which aimed towards designation as a Technological University. Designation was granted and TU Dublin was formed in 2019.

TU Dublin City Campus, in the centre of Dublin, has a proud tradition of providing technical education dating back to the nineteenth century with the formal establishment of Dublin's first Technical School. Now TU Dublin is relocating towards the nearby Grangegorman Campus, itself an international award-winning planning project with sustainable mobility principles at the heart of its design. The new campus at Grangegorman, which is the largest investment project in Higher Education within Ireland, will become the largest campus of the new TU. The opening of the Grangegorman Gateway, which incorporates the LUAS Cross City alignment and stop at Broadstone, will provide a close connection between Bolton Street and Grangegorman, the latter being an active laboratory in sustainable transport and mobility planning.

2. Programme Registration and Induction

2.1. Programme Registration

Students will be invited to register on the relevant year of the programme in advance of the commencement of the academic year. It is also at this stage that students will be invited by Student Services to obtain a student card. Information on registration is available at https://www.dit.ie/currentstudents/studentservices/registration/.
If students have any difficulties in registering, Student Services can assist by emailing StudentServices.City@TUDublin.ie. Students may also contact StudentFees.City@TUDublin.ie if there are any queries relating to fees.

2.2. Programme Induction

A programme induction session will be provided to each new cohort of students during the first week of semester one. Each student will be provided with the following information which will also be discussed during the formal Induction session:

- Student Handbook
- Relevant class group timetable
- TU Dublin General Assessment Regulations

- TU Dublin Academic calendar
- Support services available in the University

Induction sessions for each year group will also include the following:

- Workshop from the Library Service
- Workshop from the Academic Writing Centre
- Work Placement Workshop (for third year students)
- Dissertation Workshop (for final year students)

2.3 TU Dublin Academic Calendar

The academic year is divided into two semesters. Each semester is comprised of 13 weeks of classes followed by examinations. Semester 1 runs from January to June. Semester 2 runs from September to January. The TU Dublin academic calendar is available online at: https://www.tudublin.ie/explore/university-calendar/

Each semester comprises a Reading Week. Classes are not normally scheduled during Reading Week, however, it provides students with an opportunity to participate in programme field trips, assessments, self-directed learning and other learning and teaching activities.

2.4 Semester Timetables

Semester timetables are announced in advance of the commencement of teaching each semester.

Students can access their class group timetable online at:
https://www.dit.ie/studentservices/programmetimetables/accessthetimetablesystem/
A guide to using the timetabling system is also available at:
https://www.dit.ie/studentservices/programmetimetables/accessthetimetablesystem/

All classes will take place in the Bolton Street building unless otherwise advised. Attendance at classes is not mandatory, however, it is strongly recommended that students engage in their modules and attend classes as far as is practicable.

2.5 Academic Staff

Dedicated academic staff on the programme including contact details are as follows:

Table 1. Academic staff

Name	Area of Expertise	Contact details
John Higgins – Programme Chair	Transport management, logistics and supply chain management	John.higgins@tudublin.ie
Roisin Murray	Urban rail, strategic management, transport policy and planning, professional development.	Roisin.murray@tudublin.ie
Denis Brazil	Automotive technology, maritime technology, materials handling	Denis.brazil@tudublin.ie
James Brunton	Vehicle engineering and technology	James.brunton@tudublin.ie
Joe Clarke	Automotive Technology & Electronics, Diagnostic Methods, Project Management, E-mobility & Advanced Driver Assistance Systems	Joe.clarke@tudublin.ie
Derek Colley	Vehicle body technology, industry collaboration and communications, Airport operations.	Derek.colley@tudublin.ie
Michael Anderson	Railway Operations and Technology, Railway Infrastructure and Signaling	Michael.anderson@tudublin.ie
Eamonn Maguire	Transport and Urban Economics, Employment Law	Eamonn.maguire@tudublin.ie
Aidan Rooney	Aircraft Technology, Airline Operations	Aidan.rooney@tudublin.ie
Declan Byrne	Aviation technology and management	Declan.byrne@tudublin.ie
Brendan Meehan	Management accounting	Brendan.meehan@tudublin.ie
Paul Fogarty	Logistics and Supply Chain Management, Project management	Paul.fogarty@tudublin.ie
Pauric Reilly	ICT and Road Vehicle Technology, Maths and Science, Data management and analytics	pauricjreilly@tudublin.ie
Lorraine D'Arcy	Communications, Research Techniques, Transport and health, Environment, Walkability, Mobility, Sustainable Transport Infrastructure	Lorraine.darcy@tudublin.ie
Maurice Brady	Transport and maritime operations, Logistics and Supply Chain Management	Maurice.brady@tudublin.ie

3 Programme Philosophy, Structure and Learning Outcomes

3.1 Aims and Objectives of the Programme

The BSc (Hons.) in Sustainable Transport Management is a multi-disciplinary programme, which aims to provide a professional degree qualification in transportation operations management, nationally and internationally. The programme is intended for those who wish to gain the skills and knowledge in the management, operations and technology associated with road, rail, marine and aviation transport.

The programme aims to produce graduates with appropriate skillsets and a competent understanding to enable them to apply best practice in the development, operation and management related to the freight and passenger transport sector.

The programme content is grounded in the principle of management, operations, technology and sustainability. It critically considers current national and international best practices and policies and ethical dimensions. The competent transport graduate requires innovative tools and techniques but also awareness of the impacts of modes of transport on the economy and the environment.

It is an engaged programme and allows students to connect with industry through active learning and participation and ethical awareness. Students are required, within the programme, to participate in a relevant placement in the transport sector and to undertake independent research.

The programme's aims are to:

i. provide a programme leading to the award of BSc (Hons) in Sustainable Transport Management from Technological University Dublin;

ii. provide an interdisciplinary approach to transport in which students obtain a mix of operational, managerial, and technological skills and knowledge, specifically related to the transport sector;

iii. provide a programme of a standard that will merit membership of professional transport bodies in Ireland and internationally;

iv. provide individuals from diverse backgrounds with an expert understanding of the most current and emerging concepts of Sustainable Transport Management, technologies and logistics;

v. offer a high level of relevant applied knowledge and skills in the field of sustainable transport (passenger and freight) operations management and technology;

vi. provide a sound knowledge and understanding of the principles and theoretical concepts underlying operations, management and technologies associated with a range of transport modes;

vii. facilitate reflectiveness, critical thinking, problem solving, innovation, entrepreneurship and ethical awareness across global transport markets, and;

viii. provide a comprehensive understanding of the wider context of intermodal transport solutions, including sustainability, social equity, environmental concerns and economic impacts.

3.2 Programme Theme

The transport and logistics industry in Ireland and the world is going through a systemic change. Significant innovation is and will have to take place within this sector. Ireland is an open economy in a globalised world and the transport and logistics industry is critical to meeting this country's engagement in the global economy. As we all move to address climate change and embrace the 17 United Nations Sustainable Development Goals, technological advancements will continue to advance at great speed to in all parts of the transport sector.

The purpose of the BSc (Hons) in Sustainable Transport Management programme is to provide an interdisciplinary approach to developing and implementing innovative and sustainable transport solutions in which students will obtain a mix of operational, managerial and technological knowledge and skills.

TU Dublin Academic Council recommends that: *"all programmes will provide students with a range of opportunities to develop, practice and be assessed on an agreed range of key employability skills or graduate attributes."* The BSc (Hons.) in Sustainable Transport Management programme aims to promote and adhere to the TU Dublin Graduate Attributes. These are to prepare graduates within respective disciplinary fields who are: Enterprising; Expert; Engaged; Enquiry-based; and, Effective. More information about the TU Dublin Graduate Attributes is available at: https://www.dit.ie/teaching/graduateattributes/.

The programme sets out to address the increasing complexity of transport-related challenges. There is a growing need to increase efficiencies in order to meet the demands of passenger and freight transport. There is also a need to address these challenges and demands through innovative managerial, operational and evolving technological solutions.

Transport is a fundamental activity, based on functional demand, and needs to be understood fully in the context of sustainable development, society, the economy and the environment.

In order to achieve this, the programme is founded on four pillars of educational practice:

1. Management of sustainable transport systems;
2. Sustainable Transport and logistics operations;

3. Multimodal smart transport technologies;
4. Skillsets and graduate attributes for the professional transport practitioner.

The four pillars are expanded on below.

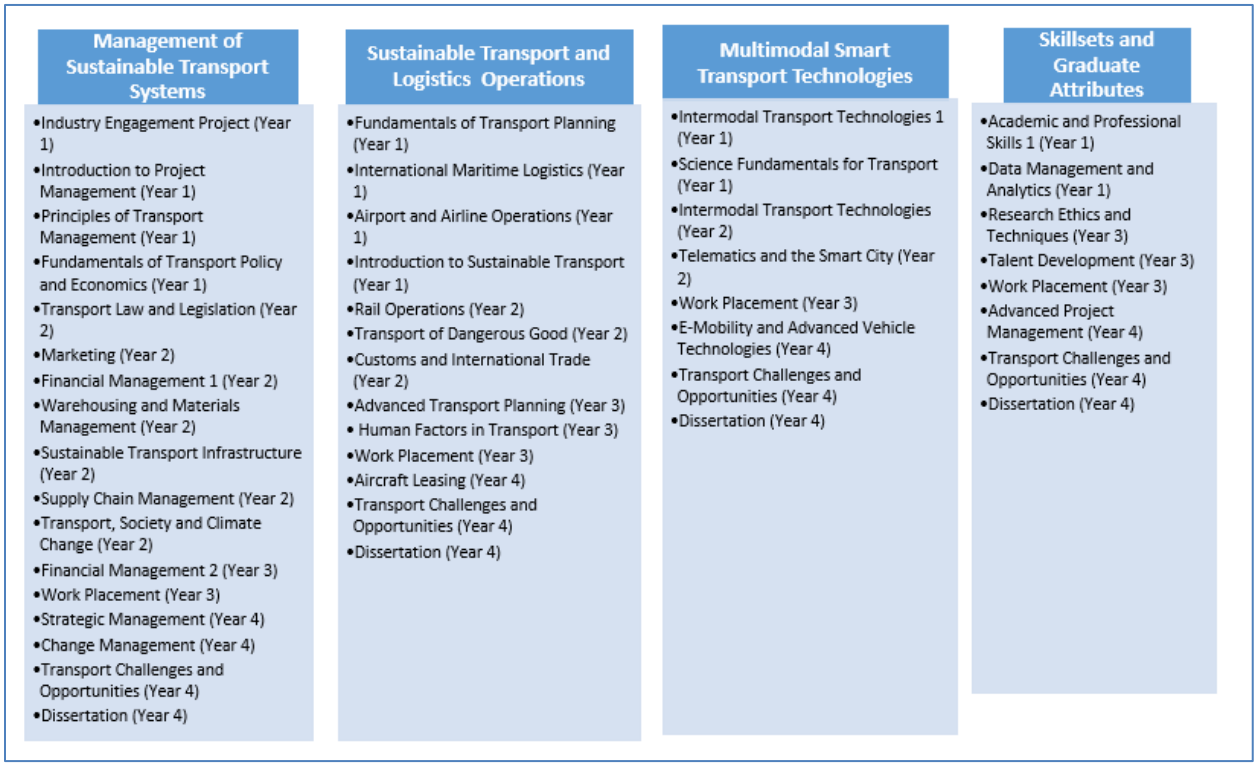

Figure 1. Four pillars of the programme.

3.3 Programme Learning Outcomes

The learning outcomes of the programme are as follows:

(a) An understanding of the theory, concepts and methods pertaining to the field of sustainable transport management.

(b) Detailed knowledge and understanding of the management of multimodal transport systems, sustainable transport and logistics operations, smart and emerging transport technologies and skillsets and graduate attributes for the professional transport practitioner.

(c) Ability to exercise appropriate judgement in a number of complex planning, design, technical and/or management functions related to operations and processes in the context of sustainable transport management.

(d) Ability to understand and critique the role of sustainability and the United Nations Sustainable Development Goals in the context of sustainable transport management.

(e) Demonstrate mastery of a specialised area of skills and tools; use and modify advanced skills and tools to conduct closely guided research, professional or advanced technical activity with respect to broadly-defined problems within the transport sector.

(f) Use advanced skills to conduct research, or advanced technical or professional activity in the area of sustainable transport management, accepting accountability for all related decision making.

(g) Learn to act in variable and unfamiliar learning contexts; learn to manage learning tasks independently, professionally and ethically whilst understanding of the need for high ethical standards in the practice of sustainable transport management, including the responsibilities of the transport profession towards society, the economy and the environment.

(h) Act effectively under guidance in a peer relationship with qualified practitioners; lead multiple, complex and heterogeneous groups.

(i) Express a comprehensive, internalised, personal world view manifesting solidarity with others by demonstrating ability to communicate effectively within the transport sector and with society at large.

(j) Transfer to programmes leading to Masters Degree or Post-graduate Diploma.

3.4 Structure and Content of the BSc (Hons) in Sustainable Transport Management

The course is structured on a modular ECTS basis. The European Credit Transfer and Accumulation System (ECTS) is a standard for comparing the study attainment and performance of students of higher education across the European Union and other collaborating European countries. For successfully completed studies, ECTS credits are awarded. ECTS is also designed to make it easier for students to move between different countries. More can be learned about ECTS at: https://ec.europa.eu/education/resources-and-tools/european-credit-transfer-and-accumulation-system-ects_en

The requirements of the BSc (Hons.) in Sustainable Transport Management are that each student must achieve a minimum number of 240 ECTS credits in order to successfully complete the course. A total of 30 ECTS is assigned to the work placement in semester two of year 3 and 15 ECTS is assigned to the dissertation in year 4. Students are awarded ECTS on the satisfactory completion of each module of the course. Specific third and final year modules are assigned 10 ECTS in recognition of the required student learning. The programme structure is set out below.

Table 2. Programme Structure

YEAR 1	
Semester 1	**Semester 2**
Academic and Professional Skills (5 ECTS)	Data Management and Analytics (5 ECTS)
Fundamentals of Transport Planning (5 ECTS)	Science Fundamentals for Transport (5 ECTS)
Industry Engagement Project (5 ECTS)	International Maritime Logistics (5 ECTS)
Intermodal Transport Technologies 1 (5 ECTS)	Airport and Airline Operations (5 ECTS)
Introduction to Project Management (5 ECTS)	Introduction to Sustainable Transport (5 ECTS)
Principles of Transport Management (5 ECTS)	Fundamentals of Transport Policy and Economics (5 ECTS)
YEAR 2	
Semester 1	**Semester 2**
Transport Law and Legislation (5 ECTS)	Customs and International Trade (5 ECTS)
Intermodal Transport Technologies 2 (5 ECTS)	Warehousing and Materials Management (5 ECTS)
Transport of Dangerous Goods (5 ECTS)	Sustainable Transport Infrastructure (5 ECTS)
Rail Operations (5 ECTS)	Supply Chain Management (5 ECTS)
Transport Marketing (5 ECTS)	Telematics and the Smart City (5 ECTS)
Financial Management 1 (5 ECTS)	Transport, Society and Climate Change (5 ECTS)
YEAR 3	
Semester 1	**Semester 2**
Advanced Transport Planning (10 ECTS)	Work Placement (30 ECTS)
Human Factors in Transport (5 ECTS)	
Research Ethics and Techniques (5 ECTS)	
Financial Management 2 (5 ECTS)	
Talent Development (5 ECTS)	
YEAR 4	
Semester 1	**Semester 2**
Strategic Management (10 ECTS)	Change Management (5 EECTS)
E-Mobility and Advanced Vehicle Technologies (10	Aircraft Leasing (5 ECTS)
Advanced Project Management (10 ECTS)	Sustainable Transport Challenges and Opportunities (5 ECTS)
Dissertation (15 ECTS)	

Module descriptors for all modules are included in section 9.

The programme learning outcomes have been mapped to all module learning outcomes in the form of a PO-LO map. As part of this process, a five-point scale has been developed to evaluate module contributions to programme learning outcomes.

(a) An understanding of the theory, concepts and methods pertaining to the field of sustainable transport management.

(b) Detailed knowledge and understanding of the management of multimodal transport systems, sustainable transport and logistics operations, smart and emerging transport technologies and skillsets and graduate attributes for the professional transport practitioner.

(c) Ability to exercise appropriate judgement in a number of complex planning, design, technical and/or management functions related to operations and processes in the context of sustainable transport management.

(d) Ability to understand and critique the role of sustainability and the United Nations Sustainable Development Goals in the context of sustainable transport management.

(e) Demonstrate mastery of a specialised area of skills and tools; use and modify advanced skills and tools to conduct closely guided research, professional or advanced technical activity with respect to broadly-defined problems within the transport sector.

(f) Use advanced skills to conduct research, or advanced technical or professional activity in the area of sustainable transport management, accepting accountability for all related decision making.

(g) Learn to act in variable and unfamiliar learning contexts; learn to manage learning tasks independently, professionally and ethically whilst understanding of the need for high ethical standards in the practice of sustainable transport management, including the responsibilities of the transport profession towards society, the economy and the environment.

(h) Act effectively under guidance in a peer relationship with qualified practitioners; lead multiple, complex and heterogeneous groups.

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(j) Transfer to programmes leading to Masters Degree or Post-graduate Diploma.

Figure 2. Programme Learning Outcomes

Score	Description
4	Module strongly contributes with a large component of assessment relating to the Programme Outcome.
3	Fairly strong contribution, with significant assessment relating to the Programme Outcome.
2	Some assessment relating to Programme Outcome, but the Programme Outcome is not a central theme of the module.
1	Only a small portion of assessment relates to the Programme Outcome.
0	Module does not contribute to the Programme Outcome.

Figure 3. Five-point scale for module contribution to programme outcomes

The PO-LO map is included below.

Table 3. PO-LO Map

				Contribution of Module Learning Outcomes to Programme Learning Outcomes									
Year	**Semester**	**Module Name**	**ECTS**	**(a)**	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**
1	1	Academic and Professional Skills	5	3	4	3	2	4	3	2	2	4	4
1	1	Fundamentals of Transport Planning	5	4	4	4	3	2	3	4	2	3	4
1	1	Industry Engagement Project	5	4	4	4	3	4	4	3	4	4	4
1	1	Intermodal Transport Technologies 1	5	3	4	4	4	2	3	2	2	3	4
1	1	Introduction to Project Management	5	2	2	3	2	3	2	3	3	3	4
1	1	Principles of Transport Management	5	2	3	4	2	4	3	3	3	4	4
1	2	Data Management and Analytics	5	3	3	4	3	4	4	3	3	3	4
1	2	Science Fundamentals for Transport	5	4	2	3	2	4	4	3	3	2	4
1	2	International Maritime Logistics	5	4	4	3	2	3	3	3	3	3	4
1	2	Airport and Airline Operations	5	3	3	3	2	3	4	4	3	3	4
1	2	Introduction to Sustainable Transport	5	4	3	3	4	3	4	4	3	3	4
1	2	Fundamentals of Transport Policy and Economics	5	4	4	3	3	3	3	3	4	4	4
2	1	Transport Law and Legislation	5	3	3	4	2	3	4	4	3	4	4
2	1	Intermodal Transport Technologies 2	5	4	3	4	2	3	3	4	3	3	4
2	1	Transport of Dangerous Goods	5	4	3	4	1	2	3	3	2	3	4
2	1	Rail Operations	5	4	3	3	3	2	3	4	3	3	4
2	1	Transport Marketing	5	3	3	4	3	4	4	3	3	3	4
2	1	Financial Management 1	5	2	3	4	2	4	2	4	1	2	4
2	2	Customs and International Trade	5	2	4	4	2	3	3	3	4	3	4
2	2	Warehousing and Materials Management	5	4	3	3	3	3	2	2	2	2	4
2	2	Sustainable Transport Infrastructure	5	4	4	4	4	4	4	4	2	3	4

2	2	Supply Chain Management	5	3	3	3	2	3	2	4	3	3	4
2	2	Telematics and the Smart City	5										4
2	2	Transport, Society and Climate Change	5	4	4	3	4	4	2	4	2	2	4
3	1	Advanced Transport Planning	10	4	4	4	3	4	4	4	4	4	4
3	1	Human Factors in Transport	5	4	3	4	2	4	4	3	2	2	4
3	1	Research Ethics and Techniques	5	3	2	2	2	4	4	4	3	3	4
3	1	Financial Management 2	5	2	3	4	2	4	2	4	1	2	4
3	1	Talent Development	5	3	4	4	2	4	4	4	3	4	4
3	2	Work Placement	30	4	4	4	2	4	3	4	4	4	4
4	1	Strategic Management	10	3	2	4	4	4	4	4	3	3	4
4	1	E-Mobility and Advanced Vehicle Technologies	10	4	4	4	3	4	3	3	4	4	4
4	1	Advanced Project Management	10	2	2	3	2	3	2	4	4	3	4
4	2	Change Management	5	2	2	4	2	3	2	4	4	3	4
4	2	Aircraft Leasing	5	4	4	4	2	4	3	3	2	3	4
4	2	Transport Challenges and Opportunities	5	4	4	4	4	3	2	3	2	3	4
4	1 + 2	Dissertation	15	4	4	4	2	4	4	4	3	3	4

3.5 Programme Delivery and Duration

The programme is delivered over an eight-semester cycle over four years. Student intake is each September. The modules of the programme covered over the four years is outlined in section 4.1.

During semester two of third year, students are required to undertake a work-placement in the transport sector. Over semesters one and two of the fourth year, students are required to undertake a dissertation on a topic within or closely related to Sustainable Transport Management and/or technology.

Module learning hours for each stage and semester are included in Table 4.

Table 4. Module Learning Hours

Year	Semester	Module Name	ECTS	Weekly contact hours	Weekly self-directed learning hours	Total contact hours	Total self-directed learning hours	Total Learning Hours
1	1	Academic and Professional Skills	5	3	5	36	64	100
1	1	Fundamentals of Transport Planning	5	3	5	36	64	100
1	1	Industry Engagement Project	5	3	5	36	64	100
1	1	Intermodal Transport Technologies 1	5	3	5	36	64	100
1	1	Introduction to Project Management	5	3	5	36	64	100
1	1	Principles of Transport Management	5	3	5	36	64	100
1	**1**	**TOTAL LEARNING HOURS**		**18**	**30**	**216**	**384**	**600**
1	2	Data Management and Analytics	5	4	4	48	52	100
1	2	Science Fundamentals for Transport	5	4	4	48	52	100
1	2	International Maritime Logistics	5	3	5	36	64	100
1	2	Airport and Airline Operations	5	4	4	48	52	100
1	2	Introduction to Sustainable Transport	5	3	5	36	64	100
1	2	Fundamentals of Transport Policy and Economics	5	4	4	48	52	100
1	**2**	**TOTAL LEARNING HOURS**		**22**	**26**	**264**	**336**	**600**
2	1	Transport Law and Legislation	5	3	5	36	64	100
2	1	Intermodal Transport Technologies 2	5	3	5	36	64	100
2	1	Transport of Dangerous Goods	5	4	4	48	52	100
2	1	Rail Operations	5	4	4	48	52	100
2	1	Transport Marketing	5	3	5	36	64	100
2	1	Financial Management 1	5	4	4	48	52	100
2	**1**	**TOTAL LEARNING HOURS**		**21**	**27**	**252**	**348**	**600**
2	2	Customs and International Trade	5	3	5	36	64	100

2	2	Warehousing and Materials Management	5	3	5	36	64	100
2	2	Sustainable Transport Infrastructure	5	3	6	30	70	100
2	2	Supply Chain Management	5	3	5	36	64	100
2	2	Telematics and the Smart City	5	3	5	36	64	100
2	2	Transport, Society and Climate Change	5	4	4	48	52	100
2	**2**	**TOTAL LEARNING HOURS**		**19**	**30**	**222**	**378**	**600**
3	1	Advanced Transport Planning	10	3	5	36	64	200
3	1	Human Factors in Transport	5	4	4	48	52	100
3	1	Research Ethics and Techniques	5	2	6	24	76	100
3	1	Financial Management 2	5	4	4	48	52	100
3	1	Talent Development	5	3	5	36	64	100
3	**1**	**TOTAL LEARNING HOURS**		**16**	**24**	**192**	**308**	**600**
3	2	Work Placement	30	0.5 (supervision)	35	8	525	600
3	**2**	**TOTAL LEARNING HOURS**		**0.5 (supervision)**	**35**	**8**	**525**	**600**
4	1	Strategic Management	10	3	5	36	164	200
4	1	E-Mobility and Advanced Vehicle Technologies	10	4	16	48	152	200
4	1	Advanced Project Management	10	4	16	48	152	200
4	**1**	**TOTAL LEARNING HOURS**		**11**	**37**	**132**	**468**	**600**
4	2	Change Management	5	3	5	36	64	100
4	2	Aircraft Leasing	5	3	5	36	64	100
4	2	Sustainable Transport Challenges and Opportunities	5	2	8	10	90	100
4	**1 + 2**	**TOTAL LEARNING HOURS**		**8**	**18**	**82**	**218**	**300**
4	1 + 2	Dissertation (Year-long Module)	15	0.5	12	12	288	300

3.6 Work Placement

Work placement takes place in the second semester of year three. It involves the student working in the transport industry for the full semester in Ireland or abroad. The performance of each student is monitored by a supervisor drawn from the lecturing staff and by a mentor in the workplace. The supervisor visits the workplace and liaises with the student and the industry mentor during the placement. The student records his/her work experience in a logbook and completes a portfolio. Student assessment is based on reports from the supervisor and employer, and on the content of the logbook and portfolio. The placement carries 30 ECTS. Every attempt will be made to ensure that students receive work placement. Students are also encouraged, from a learning perspective, to seek their own work placement. In cases where work placement is not possible the student will assist in a University research project which will, as far as is practicable, enable him/her to achieve the stated learning outcomes.

Each student will be provided with the "*TU814 Student Work Placement Handbook"* at the beginning of year 3. This will outline a general overview of placement, its role and contribution to the student's programme of study. It will also provide details on the learning outcomes of the module, guidelines on student conduct whilst on placement and arrangements for the monitoring of students during the placement period. The assessment criteria is also described as well as frequently asked questions which may arise in advance or during the placement.

3.7 Dissertation

The student must successfully complete a dissertation during the final year. The research topic and literature review must be started during semester one of year 4. Students must submit a project proposal and topics must be agreed and approved by the Programme Chair and Team. A supervisor will also be appointed to each dissertation. Students are encouraged to meet on a regular basis with their supervisor and to keep a logbook to document progress. The final submission date of the dissertation is usually during the final teaching week of the TU Dublin academic calendar in the final semester of the course.

An indicative timeline for the completion of the final year dissertation which allows for students to obtain formal feedback before final submission is included below:

Table 5. Dissertation: Submission deadlines and Formal feedback.

Module Name	ECTS	Assignment/ Continous Assessment weighting (%)	Exam Weighting (%)	Deadline for Assignment 1 /Continous Assessment 1 (Semester week no.)	Deadline for Assignment 2/Continous Assessment 2 (Semester week no.)	Deadline for Assignment 3/Continous Assessment 3 (Semester week no.)	Deadline for Assignment 4/Continous Assessment 4 (Semester week no.)
Dissertation	15	100%	N/A	Semester 1 - Week 3: Proposal	Semester 1 - Week 12: Completed Literature Review + 2 significant Chapters as agreed with academic supervisor	Semester 2 - Week 8: Submission of draft Dissertation for formal feedback	Semester 2 - Week 12: Submission of final Dissertation

Students will be provided with and referred to the **"***TU814 Dissertation Guidelines***"**. The guidelines will include information relating to the marking scheme, the recommended structure of the dissertation and a guide to referencing.

4 Accommodation and Facilities

Dedicated teaching accommodation for the programme is provided in the main Bolton Street building. All teaching, laboratories and workshops are equipped with modern audio-visual facilities.

The School has dedicated Transport Technology laboratories and workshops located on the ground floor in the main Bolton Street building. There is also a heavy vehicle technology workshop situated in the Beresford Street building. The Aviation Technology Centre in Dublin Airport Business Park is a facility of the School. Students from the BSc (Hons.) in Sustainable Transport Management have use of the facility for the purpose of aviation-related modules.

The School also has a dedicated PC lab in the E-Block building of the Bolton Street campus. This facility will accommodate learning and teaching for modules such as Data Management and Analytics (year 1) and Advanced Project Management (year 4).

4.1 TU Dublin Information Services

You are provided with your login for the University's IT Systems when you register. You use the same login for:

- Brightspace: https://www.dit.ie/brightspace/
- Email: http://myTU Dublin.ie/
- Computer laboratories
- Wifi

You will find a detailed explanation of how to use the TU Dublin IT systems, including those listed above, printing services, password facilities and others at http://www.TU Dublin.ie/is/student/.

Prior to using TU Dublin computer services, all students should familiarize themselves with TU Dublin's Student Regulations Governing the use of Computer Resources - http://www.TU Dublin.ie/is/governance/regulations/studentregulations/.

You can get support for your IT queries by contacting support@TUDublin.ie or by calling +353-1-220 3123.

Students should familiarise themselves with the regulations regarding the use of computers and other IT equipment at TU Dublin. In particular, students should familiarise themselves with regulations pertaining to the use of email and the Internet.

The Institute's computer facilities and services should not be used to create, send, post, download, forward, view, store or display offensive, abusive, slanderous, vulgar, threatening or defamatory messages, text, graphics, or images or material from whatever source which may put the Institute at risk of prosecution, civil action, embarrassment or loss of reputation. This includes harassment, discrimination and intimidation of individuals on the basis of race, sex, religion, ethnicity, sexual orientation, disability, age marital status, family status or membership of the traveler community, etc.

Further information on use of computer facilities and regulations are available on the TU Dublin website at: http://www.TU Dublin.ie/is/student

4.2 TU Dublin Brightspace

Brightspace is TU Dublin's online virtual learning environment. This e-learning platform is used for delivery of lectures through the Bongo platform, notes, online discussion, assignment submission and assessment feedback. You can access Brightspace online at https://www.dit.ie/brightspace/ using your IT login. If you cannot access a particular module, you should contact the module lecturer.

Further information on Brightspace is available at https://www.dit.ie/brightspace/studentlogin/.

4.3 TU Dublin Library

Each of the TU Dublin campuses are equipped with a library containing modern lending and research facilities. Approximately 170,000 volumes are held and about 1,000 periodicals are subscribed to. The central library system is based in TU Dublin Aungier Street and an automated library management system is in place at all TU Dublin campus sites. Students may query and search for texts only via the TU Dublin website. All volumes are bar coded and lending facilities are controlled and managed by the system.

The TU Dublin City Campus Bolton Street library was refurbished in the summer of 2010. It has 420 seats, contains circa 40,000 volumes and subscribes to about 400 current periodicals. In the TU Dublin library, there is access to CDROM data bases, access to the internet, micro-fiche, maps, videos, slides and photocopying services. Students are actively encouraged to make full use of all the information services during project work and research.

The budget for the library is determined on an annual basis and is derived from the central library fund of the TU Dublin. Library staff at TU Dublin Bolton Street manage all titles and ordering for all Schools. Requests for publications and journals are made to staff at the start of the academic year and periodically during the year. The planning reference library is well stocked, with significant and recent publications journals and periodicals.

Students can access TU Dublin's online library system at http://www.TU Dublin.ie/library/. Certain facilities require the use of a login name and password. TU Dublin library staff can advise you on how to access these systems.

Opening hours for the library vary according to the time of year. You can find opening hours online at http://www.TU Dublin.ie/library/openinghours/.

A library tour and induction will be provided by TU Dublin Librarians in arrangement with the Programme Chairperson at the start of semester 1.

5 Assessment and Feedback

5.1 TU Dublin General Assessment Regulations

Assessment will be undertaken in accordance with University, College and School norms and guidelines as specified in the TU Dublin General Assessment Regulations. The General Assessment Regulations govern all assessment in the Institute and are available online at: http://www.TUDublin.ie/qualityassuranceandacademicprogrammerecords/student- assessment-regulations/general/

5.2 Examinations and Assignments

The following assessment methods are provided for in the TU Dublin General Assessment Regulations:

- written examination;
- assignment.

Assignments may be in essay, project report or other form of individual assignment; or by assessment of class performance or a group project. Both forms of assessment can be used in awarding of credits.

Examination timetables and venues will be notified by the TU Dublin Examinations Office at: http://TUDublin.ie/currentstudents/studentservices/examinations/examinationstimetables/

Written exams are normally held at the end of each semester with provision for repeat exams in autumn. Students who fail to pass a module will be informed by the Exams Office of the requirements to retake that module or a component of the module. There is a maximum grade of 40% for a repeat module.

A mapping of the module learning outcomes to the assessment method for each module is included in Appendix I.

The module assessment breakdown and schedule of assessments for each stage and semester of the BSc (Hons.) in Sustainable Transport Management programme is as follows:

Table 6. Assessment Breakdown and Schedule of Assessments

Year	Semester	Module Name	ECTS	Assignment/ Continuous Assessment weighting (%)	Exam Weighting (%)	Deadline for Continuous Assessment 1 (Semester week no.)	Deadline for Continuous Assessment 2 (Semester week no.)	Deadline for Continuous Assessment 3 (Semester week no.)	Deadline for Continuous Assessment 4 (Semester week no.)	End of Semester Exam (Yes/No)
1	1	Academic and Professional Skills	5	100%	N/A	Week 3 (Presentation)	Week 8 (Assignment)	Week 12 (Group poster)	N/A	No
1	1	Fundamentals of Transport Planning	5	50%	50%	Week 10 (Group Presentation)	N/A	N/A	N/A	Yes
1	1	Industry Engagement Project	5	100%	N/A	Week 4	Week 8	Week 12	N/A	No
1	1	Intermodal Transport Technologies 1	5	40%	60%	Week 6	Week 12	N/A	N/A	Yes
1	1	Introduction to Project Management	5	100%	N/A	Week 6	Week 12	N/A	N/A	No
1	1	Principles of Transport Management	5	100%	N/A	Week 5 (Quiz)	Week 10 (Quiz)	Week 13 Group Project / Presentation	N/A	No
1	2	Data Management and Analytics	5	100%	N/A	Week 3	Week 6	Week 9	Week 12	No
1	2	Science Fundamentals for Transport	5	40%	60%	N/A	Week 10	N/A	N/A	Yes
1	2	International Maritime Logistics	5	50%	50%	Week 11 (Group Presentation)	N/A	N/A	N/A	Yes
1	2	Airport and Airline Operations	5	30%	70%	Week 5	Week 9	N/A	N/A	Yes
1	2	Introduction to Sustainable Transport	5	100%	N/A	Week 5 (Quiz)	Week 10 (Quiz)	Week 13 Group Project / Presentation	N/A	No
1	2	Fundamentals of Transport Policy and Economics	5	100%	N/A	Week 7 (Quiz)	Week 11 (Quiz)	Week 13 Group Project / Presentation	N/A	No
2	1	Transport Law and Legislation	5	50%	50%	Week 12 (Group Case Study)	N/A	N/A	N/A	Yes
2	1	Intermodal Transport Technologies 2	5	40%	60%	Week 6	Week 12	N/A	N/A	Yes

2	1	Transport of Dangerous Goods	5	100%	N/A	Week 3	Week 5	Week 10	Week 12 (Case Study)	No
2	1	Rail Operations	5	40%	60%	Week 6	N/A	N/A	N/A	Yes
2	1	Transport Marketing	5	100%	N/A	Week 5 (Quiz)	Week 10 (Quiz)	Week 13 Group Project / Presentation	N/A	Yes
2	1	Financial Management 1	5	N/A	100%	N/A	N/A	N/A	N/A	Yes
2	2	Customs and International Trade	5	50%	50%	Week 12 (Group project & presentation)	N/A	N/A	N/A	Yes
2	2	Warehousing and Materials Management	5	40%	60%	Week 6	Week 12	N/A	N/A	Yes
2	2	Sustainable Transport Infrastructure	5	40%	60%	Week 7	Week 10	Week 13 (ePortfolio)	N/A	No
2	2	Supply Chain Management	5	40%	60%	Week 6	Week 12	N/A	N/A	Yes
2	2	Telematics and the Smart City	5	100%	N/A	Week 6 (Debate)	Week 11 (Poster)	Week 12 (Group Presentation)	Week 13 (ePortfolio)	No
2	2	Transport, Society and Climate Change	5	40%	60%	Week 4	Week 10	N/A	N/A	Yes
3	1	Advanced Transport Planning	10	50%	50%	Week 11 (Group project and presentation)	N/A	N/A	N/A	Yes
3	1	Human Factors in Transport	5	30%	70%	Week 8	Week 12	N/A	N/A	Yes
3	1	Research Ethics & Techniques	5	100%	N/A	Week 4	Week 7	Week 10	Week 13 (ePortfolio)	No
4	1	Financial Management 2	5	25%	75%	Week 11	N/A	N/A	N/A	Yes
3	1	Talent Development	5	100%	N/A	Week 4	Week 9	Week 12	N/A	No
3	2	Work Placement	30	100%	N/A	Week 15	N/A	N/A	N/A	No
4	1	Strategic Management	10	50%	50%	Week 10 (Group Presentation)	N/A	N/A	N/A	Yes
4	1	E-Mobility and Advanced Vehicle Technologies	10	40%	60%	Week 8	N/A	N/A	N/A	Yes
4	1	Advanced Project Management	10	100%	N/A	Week 5	Week 9	Week 12	N/A	No
4	2	Change Management	5	100%	N/A	Week 4	Week 8	Week 12	N/A	No

4	2	Aircraft Leasing	5	100%	N/A	Week 13	N/A	N/A	N/A	No
4	2	Sustainable Transport Challenges and Opportunities	5	100%	N/A	Week 3	Week 6	Week 9	Week 13	No
4	1 + 2	Dissertation	15	100%	N/A	Week 3 (Proposal)	Week 12 (Completed Literature Review + 2 significant Chapters as agreed with academic supervisor)	Week 8 - Sem 2 (Submission of draft Dissertation for formal feedback)	Week 12 - Sem 2 (Submission of final Dissertation)	No

5.3 Submission of Assignments

All assignments are to be submitted to the designated school office using the assessment cover sheet, or online through Brightspace, by the deadline set by the module coordinator/lecturer.

Where work is submitted late, unless the student is covered by a medical certificate or equivalent, or unless an approved extension has been obtained from module coordinator, the student may lose up to 10% of the eligible marks for that assessment for each working day that the assignment/coursework is late. An extension must be requested at least two working days before the due date and is at the discretion of the module coordinator/lecturer according to the TU Dublin General Assessment Regulations.

If you are unable to submit an assignment on time for a valid reason (valid reasons are set out in the Personal Circumstances form) you may be able to submit a Personal Circumstances form with supporting documentation to your lecturer. The Personal Circumstances form is available at https://www.dit.ie/media/qualityassuranceandacademicprogrammerecords/regulations/PC1%20Personal%20Circumstances%20Form%20-%20revised%2029.05.19.pdf

Module coordinators are responsible for setting assessments and are encouraged to discuss and distribute assignments as early as possible in each semester.

5.4 Plagiarism and Cheating

All assessments are intended to determine the skills, abilities, understanding and knowledge of each of the individual students undertaking the assessment. Cheating is defined as obtaining an unfair academic advantage and any student found using any form of cheating, attempting to cheat or assisting someone else to cheat may be subject to disciplinary action in accordance with the University's Disciplinary Procedure.

Students should familiarise themselves with academic assessment regulations regarding plagiarism. Plagiarism includes (but is not limited to) copying the work of others (from published or unpublished sources, paper or electronic, written or graphic) without due citation, closely paraphrasing the work of others, simply joining together substantially existing work (even if cited) and submitting the work of others as your own. This is a serious issue and can result in formal disciplinary action. All TU Dublin students should familiarise themselves with academic conventions on citing work and other matters of written style. There are a variety of style manuals and other publications in the library covering this subject.

5.5 Feedback, Results and Award Classifications

Students will be provided with formal feedback on assignments and continuous assessments during the semester. Students will also be provided with a an opportunity to view marked exam scripts in accordance with the TU Dublin General Assessment Regulations which can be found at: https://www.dit.ie/qualityassuranceandacademicprogrammerecords/student-assessment-regulations/general/ .

Applications for a module assessment recheck, remark and appeal will also be facilitated in accordance with the General Assessment Regulations.

Following examinations, an examination board is held, after which marks are released online. Students will receive an email from the TU Dublin Examinations Office providing details of how to access these results when they are released. Following the completion of semester 2, you will also receive written notification of your results.

The final degree award will be classified based on the final average grade calculated across year 4 of the programme. If a student has received approval for an exemption in any module(s), the award classification will be based on a calculation of the average grades across all other modules undertaken. Award classifications are as follows:

Table 7. Award Classifications

Average Mark	Classification
>=70%	First Class Honours (usually called a *first or 1.1*)
60%- 69%	Second Class Honours, First Division (usually called a *2.1*)
50%-59%	Second Class Honours, Second Division (usually called a *2.2*)
40% - 49%	Pass

Those who are completing examinations in the August supplemental session will receive notification of results online in September. Students will receive an email from the TU Dublin Examinations Office providing details of how to access these results when they are released.

Upon completion of the examination process, you can view your examination script. The rules for rechecks, remarks and appeals are outlined in the General Assessment Regulations.

In the final year of the programme, students may be invited to meet with the external examiners at the time of the final examination board in June. The external examiners for the programme play a vital role in assuring the quality of the programme.

TU Dublin graduation ceremonies normally take place in November of each year.

5.6 Compensation

Some programmes at TU Dublin permit for compensation between subjects, usually in restricted circumstances, where a student may not have passed a component or module. There is a compensation system on the BSc (Hons.) in Sustainable Transport Management programme. This is in accordance with the TU Dublin General Assessment Regulations.

6 Quality Assurance and Programme Management

6.1 Quality Assurance

Students play a vital role in programme development and monitoring. As a student, you can provide feedback both formally and informally. You are also represented, through your class representative, on the programme committee, and by the Student Union on College Board and Academic Council.

Upon completion of each module, you are asked to submit a Student Feedback Form (Q6A) to your lecturer. Your lecturer will use this feedback in the ongoing development of their module.

Once per year you are asked to provide general feedback on your programme using the Programme Survey Questionnaire (Q6C). This feedback is provided to school management and is used for the ongoing development of the programme.

Copies of these forms are available online at:
http://www.dit.ie/qualityassuranceandacademicprogrammerecords/forms/

Staff-student meetings are held throughout the year, during which you get an opportunity to provide feedback to the academic staff on the programme. You can, at any point, ask to meet with your lecturer or your class tutor to provide informal feedback.

Each cohort of students is encouraged to nominate a class representative. Class Reps are invited to attend a Programme Committee meeting each semester. Support and information for Class Reps is available from the TU Dublin Student Union - http://www.TUDublinsu.ie/

6.2 Academic Quality and Enhancement Procedures

The Programme Committee is responsible for designing, monitoring and managing your programme. The Programme Committee meets at least once per semester. Your class representative is a member of this committee, and can bring issues of concern to the committee. At the end of the academic year the programme committee produces an Annual Monitoring (Q5) report which provides a review of the year, incorporating feedback from students, staff and external examiners, leading to actions which will help enhance the programme in the following year.

Academic Board has responsibility for developing and monitoring the implementation of academic policy matters and in particular academic quality assurance procedures. All modifications to your programme need to be approved first by the Programme Committee and then by Academic Board. General academic issues of relevance to the programme in the University are discussed at the College Academic Board. You are represented at Academic Board by your Student Union.

Academic Council is a statutory body, provision for which is made in the TU Dublin Act. It is appointed by the Governing Body of the University to assist it in the planning, co-ordinating, developing and overseeing the academic work of the University and in protecting, maintaining and developing the academic standards of the programmes and other academic activities of the University. You are represented on Academic Council by your Student Union.

Normally at five yearly intervals, the Programme Committee is required to review the programme, and present the reviewed programme to a panel comprised of academic staff from TU Dublin, academic staff from elsewhere and industry representatives. This review is informed by the annual monitoring process and your feedback.

7. Guidance for Students

7.1 Health and Safety

All students must familiarise themselves with the Health and Safety rules of the Institute, which are available online at http://www.TU Dublin.ie/healthsafety/.

7.2 Rules & Regulations Governing Student Activity at TU Dublin

Rules & Regulations Governing Student Activity at TU Dublin are available online at:
https://www.dit.ie/studentservices/studentservicecentres/tudublinrulesregulationsforstudents/

7.3 Student Charter

The mission of the University emphasises partnerships between staff and students and working together to improve the quality of service and the response to diversity of needs.

The focus in our Institute community is thus on personal responsibility to each other. Our Student Charter is intended to underpin this joint personal accountability, and was drawn up by a group of staff and students after consultation with staff and students across the Institute. It sets out the level of service and standards of excellence we intend to provide for our students from the point of making an application to come to the Institute, to student life while studying here including the academic, social, cultural & athletic environments of the Technological University Dublin and describes the Institute's expectations of students in such matters.

The student charter is available online at:
https://www.dit.ie/media/campuslife/olddocuments/DITStudentCharter.pdf

7.4 Clubs and Societies

There is a vast array of societies on offer in TU Dublin. Currently there are in excess of 75 societies which range from volunteering, performing arts, course-related, campaigning & political, religious, sign language, student media, plus so much more. TU Dublin Societies are run by the students for the students and supported by the staff of the society's office through advice, administration and finance.

For more details see http://www.dit.ie/societies/.

7.5 TU Dublin Campus Life Support for Students

TU Dublin's Campus Life (http://www.dit.ie/campuslife/) provides a range of supports and information for students about:

- Accommodation
- Careers
- Chaplaincy
- Counselling
- Disability Service
- Health Centre
- Mature Student Support
- Sports
- Student Financial Aid

- Study Skills

7.6 Useful Links

Technological University Dublin – http://www.tudublin.ie
TU Dublin Access Service –
https://www.dit.ie/ace/access/Campus Life -
TU Dublin Campus Life -
https://www.dit.ie/campuslife/campuslifeoffice/
Careers Service - http://www.TUDublin.ie/careers/
Chaplaincy - https://www.dit.ie/chaplaincy/
Counselling- https://www.tudublin.ie/for-students/student-services-and-support/student-wellbeing/counselling-service/
Disability Support Service - https://www.dit.ie/campuslife/disability/
Health and Safety - https://www.dit.ie/healthsafety/
Health Centre - http://www.dit.ie/campuslife/studenthealthservice/
Information Systems - http://www.dit.ie/is/student/
Library - http://www.TU Dublin.ie/library/
Mature Student Support -
https://www.dit.ie/studyatdit/undergraduate/howtoapply/maturestudents/
Registrations - https://www.dit.ie/studentservices/registration/
Replacement student cards:
https://www.dit.ie/studentservices/studentservicecentres/studentidcard/
Societies - https://www.dit.ie/societies/listofsocieties/
Sports - https://www.dit.ie/sport/
Student Union - http://www.TUDublinsu.ie/
How to get to TU Dublin: http://www.dit.ie/campuslife/transport/

7.7 Join the TU Dublin graduate network

The TU Dublin Graduate Network keeps graduates in touch with each other and with TU Dublin. The Network, which was launched in 1997 as a networking association for former TU Dublin students, has 100,000 members worldwide. As part of the network graduates receive updates about TU Dublin and alumni via the Graduate Network e-zine and Facebook page as well as information about events and class reunions for alumni. Members can also avail of a gym and library membership discount. Recent events have included class reunions for 10, 20 and 40 year anniversaries; alumni tours of Grangegorman campus, receptions in London, Brussels, Chicago, as well as events for alumni and students with guest

speakers from TU Dublin's diaspora. Further information on the TU Dublin Graduate Network is available at: https://www.dit.ie/graduatenetwork/

8 Career Opportunities, Transfer and Progression

8.1 Career Opportunities

Career prospects following successful completion of the BSc (Hons.) in Transport Operation Management are excellent. The transport sector is one of the key sectors in Ireland and abroad. It is a growing industry and offers a vast range of career opportunities. There are many career opportunities for graduates in all branches of transport, in both the private and public sectors. On completion of the course, graduates will be suitably qualified for a career in the transport industry where they will be able to apply and use the knowledge and skills gained on the programme.

Typical graduate roles include:

- Transport Planner
- Logistics Planner or Coordinator
- Flight Planner
- Transport Coordinator/Manager
- Supply Planner
- Ocean Export Coordinator
- Aircraft Hangar Maintenance Planner
- Flight Crew Services Coordinator/Manager

8.2 Transfer and Progression

Graduates of the programme may undertake a level 9 or 10 programme in TU Dublin, other Irish or international University or Institute of Technology.

Level 9 programmes in the School include the following:

- MSc in Logistics and Supply Chain Management (one year full-time)
- MSc in Logistics and Supply Chain Management (two year part-time)
- MSc in Transport and Mobility (two year part-time)

Further information on these programme is available at: https://www.dit.ie/transport/programmes/pg/

8.3 Professional Accreditation and Affiliation

The Programme Team maintains links with national and international professional bodies in the field of transport and engineering. These include:

- Chartered Institute of Logistics and Transport (CILT)
- Chartered Institute of Highways and Transportation (Republic of Ireland branch)
- Engineers Ireland
- ITS Ireland
- Transport Planning Society (Irish branch)
- Institute of Road Transport Engineers (SOE)
- Society of Irish Motor Industry (SIMI)
- National Institute of Transport and Logistics
- POLIS
- The Institute of Road Transport Engineers – (I.R.T.E.)
- The Society of Operations Engineers (S.O.E.)
- Road Haulage Association (R.H.A.)
- National Institute of Transport and Logistics (N.I.T.L.)
- The Institute of the Motor Industry (I.M.I.)
- Chartered Institute of Management (C.I.M.)
- The Institute of Automotive Engineering Assessors (I.A.E.A.)
- The Vehicle Bodybuilders and Repairers Association (V.B.R.A.)
- The Royal Aeronautical Society (R.Ae.S.)
- The Federation of Aerospace Enterprises in Ireland (F.A.E.I.)

Ongoing relations continue to be maintained for the purposes of programme marketing, programme evaluation and wider professional engagement.

8.4 Industrial Advisory Board

The Programme Team aims to retain an industry panel to advise on the needs of the transport sector and the strategic direction of the programme. A Programme Advisory Panel will be set up to include leading members of the transport sector.

8.5 Links with Industry and Civic Society

The programme maintains close links with the transport sector in order to ensure practical relevance to the needs of the industry. The use of part-time and visiting senior practicing professionals for teaching is an integral and important means of achieving and maintaining this relevance.

The programme also seeks to maintain close links with civic society groups and works closely with the TU Dublin Access and Civic Engagement (ACE) office in order to ensure practical relevance of the programme to the needs of society.

8.6 Professional Involvement of Staff

The participation by whole-time staff in professional education programmes, conferences and training seminars, professional institutes and committees ensures that students have access to the most up to date developments in issues relating to transport in Ireland.

The table below shows the core teaching staff qualifications and professional affiliations:

Table 8. Teaching Staff Qualifications and Professional Affiliations

Name	Qualification and Affiliation
Denis Brazil	NCC BSc, MSc
James Brunton	TechCert TechDip BSc MPhil CEng MIEI
Joe Clarke	B.Eng.Tech, BSc (Hons), MSc, CAE, MIMI, MSOE, MIRTE
Derek Colley	C&G NCC PgCert BSc MIMI
Roisin Murray	CertEng DipEng BEng ME PgDip FCILT
John Higgins	MSc MSOE MIRTE
Michael Anderson	BSc (Hons) Logistics and Supply Chain
Eamonn Maguire	BA (Hons) Econ., MA, PG Diploma in Law
Kay McGinley	BSc (Hons), MPhil, CMILT
Aidan Rooney	MSc Aerospace, B Ed Tech Engineering.
Declan Byrne	BEng MSc
Paul Fogarty	Tech Dip FTC MSc SCM MCILT

Pauric Reilly	C&G NCC BSc
Lorraine D'Arcy	BE MEngSc PhD PGDip MIEI MTPS MCIHT
Maurice Brady	BSc MPhil CMILT

9. Module Descriptors

The descriptions of the content, aims, learning outcomes, teaching methods and assignment types for each module delivered are set out below.

YEAR 1

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Academic and Professional Skills					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:
This module introduces the student to the theoretical and practical approaches to effective academic and professional skills relevant to the transportation sector. The module is designed to enhance and improve the necessary skills in writing reports and documents, within the transport industry. The module introduces students to a variety of communication tools used in a business setting. The module will explore effective reading and study skills including self-directed learning. The module is designed to equip the student with the knowledge and skills which will enable them to become effective communicators, team players. leaders and professionals within the transportation industry.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Redefine the necessity for academic and professional skills applicable to the transport industry.
2	Describe the role of communications and teamwork in an organisational context.
3	Describe the methods of communicating information through academic writing, report writing and formal meetings as well as other methods available.
4	State the importance of cross-cultural communications and teamwork in a global market place.
5	Describe presentation skills and skills for the sourcing of information.
6	List the core leadership skills necessary to progress within the transport industry

Indicative Syllabus:
Professional skills *What are professional skills and why are these important?* *How can I analyse my needs?* *What are professional ethics?* *How can I achieve my needs?* **Organisational communications and teamwork** *Role of communications* *Conduct of a business meeting* *Role of teamwork in an organisation* **Academic writing and report writing** *What is it and why is it important?* *Sourcing relevant information.* *Structuring a report and assignment.* *Citing and referencing.* **Formal presentation skills** *Cultural communication and boundaries* *Presentation Techniques* **Core leadership skills**

Purpose of leadership skills *Values and relatedness* *Influencing and negotiating* *Fair-decision making*

Learning and Teaching Methods:	
In class lectures, Class discussions, Interactive group exercises, Discussions of real-world case studies, related issues and overcoming solutions.	
Total Teaching Contact Hours	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:
Delivered over one semester for three contact hours per week.

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Students will be provided with an academic journal paper and asked to describe and present the paper to their peers.	35%	1, 2, 3
A research assignment will be given on cross-cultural communications or teamwork in a global market place.	35%	4
Students will be assigned into groups and asked to present a poster relating to core leadership skills necessary to progress within the transport industry.	30%	5, 6
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements		

Essential Reading: (author, date, title, publisher)

Dumitrascu, S., 2015. Assertive Communication: A Practical Guide.

Sullivan, J., 2016. Simply Said: Communicating Better at Work and Beyond. Wiley.

Western, S., 2019. Leadership: A critical text (3rd Edition). Sage.

Supplemental Reading: (author, date, title, publisher)

Crompton, T., 2010. Common Cause: the case for working with our cultural values – available at www.valuesandframes.org

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Fundamentals of Transport Planning					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

The year 1, semester 1 module is an introduction to the concept of transport and logistics planning. It will afford the student an opportunity to understand the underlining concepts of logistics planning including intermodality of transport and the various factors and influencers that make it an attractive option for the logistics sector. It will discuss the four modes of transport and highlight the mechanisms by which economies (sustainability, performance and monetary) can be gained through co-ordination and interoperability.

The module includes the relevant statutory controls that imping on the planning (tactical, operational, strategic and contingency) function of a logistics management team.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Distinguish the four prominent modes of transport.
2	Recognise intermodal and multimodal as key transport concepts as a key driver for firm performance and sustainability initiatives.
3	Explain mechanisms to enhance intermodality of transport services.
4	Determine the importance of planning as a key performance enhancer in logistics operations.
5	Illustrate the role played by government and government agencies in the creation of enablers for intermodal and multimodal transport services.
6	Describe the role and influence of statutory regulations on fleet management practices and impacts.
7	Contribute effectively in a team environment.

Indicative Syllabus:

8 Topics

1. Function of transport and logistics; social, economic and political need, Economic advantage, trade advantage, national cohesion, characteristics of transport, Costs and benefits of logistics (congestion, noise, pollution).

2. Role of Government and Statutory Bodies; Government intervention and control of transport, Regulation and liberalisation, Government agencies and authorities, UN SDG's.

3. Characteristics of goods carried; size and divisibility, density of goods, stowage of goods, handling characteristics, liability, hazardous goods, abnormal loads, unitisation.

4. Interoperability and intermodality; carriage units and interchangeability, intermodal services, multimodal services, advantages and disadvantages of multiple modes in the transport chain, transport carrying units, handling systems, transport operator requirements, carrier responsibility and limitation of liability.

5. Road Transport Characteristics; road vehicle types, passenger and cargo services, development of roads, determining road needs, national development plan, EU regulations concerning transport operations, road transport operator licensing.

6. Air Transport Characteristics; development of air transport, types of commercial aircraft, national and international air transport, Sovereignty, international conventions (Paris, Havana, Warsaw and Chicago). Five freedoms, open sky policies EU/USA, role of international bodies IATA, JAA, EASA.

7. Marine Transport Characteristics: importance of marine transport - island nation, role and requirements of statutory harbour authorities, types of marine vessels, cargo classification, passenger services, Stakeholders in the maritime sector, structure of the industry.

8. Rail Transport Characteristics: permanent way construction gauge, terminals, light and heavy rail, types of rail vehicles, development of rail in Ireland, reinvestment in railways, separation of rail infrastructure and operations, environmental advantage.

Learning and Teaching Methods:

This module will be delivered via the following format

1. Class lectures
2. Class discussion
3. Case studies
4. Site visits
5. Guest lectures
6. Problem based learning
7. Tutorials

Total Teaching Contact Hours 1 two-hour lecture per week 1 one-hour tutorial per week	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:

This module is delivered over one semester

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Continuous Assessment 1 – Presentation (group) – Week 10. (Presentation focusing on the benefits and scope of the implementation of a multi-modal transport system from both a vendor and consumer perspective). Topics 1-8	50%	LO 1-7
End of semester written examination 2 Hours duration – Answer any 4 of 6 Questions	50%	LO 1-6
Overall pass mark 40%		

Module Specific Assessment Arrangements (if applicable)	
(a) Derogations from General Assessment Regulations	NONE
(b) Module Assessment Thresholds	NONE
(c) Special Repeat Assessment Arrangements	1 repeat continuous assessment offered: 25 open ended short answer questions LO 1-6 (50%) Supplemental Examination (50%) LO 1-6

Essential Reading:

Mangan, J. and Lalwani, C. (2016*). Global logistics and supply chain management, 3rd edition.* Hoboken: John Wiley and Sons.

Supplemental Reading:

Ballou, R. (2014). *Business logistics/Supply chain management: planning, organising and controlling the supply chain*. New Jersey: Pearson Prentice Hall.

Harks, T., König, F., Matuschke, J., Richter, A., & Schulz, J. (2016). *An Integrated Approach to Tactical Transportation Planning in Logistics Networks*. Transportation Science, Vol. 50 No. 2, pp. 439–460.

Li, L., Negenborn, R. and De Schutter, B. (2015). *Intermodal freight transport planning – A receding horizon control approach*. Transportation Research Part C: Emerging Technologies, Vol. 60 Nov 2015, pp.77-95.

Manners-Bell, J. (2017*). Introduction to global logistics: Delivering the goods.* New York: Kogan Page.

Monios, J. and Bergqvist, R., (2017). *Intermodal freight transport and logistics*. London: CRC Press.

Rau, H., Hynes, M. and Heisserer, B. (2015). *Transport policy and governance in turbulent times: Evidence from Ireland*. Case Studies on Transport Policy, Vol. 4, pp.45-56.

Richter, A and Stiller, S. (2018). *Robust Strategic Route Planning in Logistics*. Transportation Science, Vol. 52 No. 1, pp. 38 – 58.

Sosunova, L., Noskov, S., Goryacheva, I., Astafieva, N. and Kalashnikov, S. (2018). *Improving the management technique of logistics planning in the supply chain. Problems and Perspectives in Management*, Vol. 16 No. 3, pp. 48-62.

Visser, H. and van Goor, A. (2006). *Logistics: Principles and Practice.* Groningen: Wolters-Noordhoff.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Industry Engagement Project					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:
Students will identify and collaborate with Industry partners using applied research projects. The research approaches will examine and relate to operational and managerial logistical challenges such as energy, climate change and future sustainability with innovative thinking and skill development.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Seek out and collaborate with external industry partners in applied research projects
2	List relevant topics for research (overview)
3	Describe and review a range of projects based on the requirements of individual companies
4	Define and apply basic research methodologies

Indicative Syllabus:

1. Students are required to identify and collaborate with external industry partners in the form of recognised research methodology, these projects will seek to identify areas of researchable interest within the chosen transport and logistics sector.
2. Define and apply basic research methodologies (primary, secondary, survey research etc) that will provide relevant knowledge
3. Define techniques for sourcing and referencing data and publications
4. Identify relevant research questions relevant to transportation and use appropriate methods to explore these questions
5. Define a methodology for gathering information for primary research data
6. Identify and present secondary research

Learning and Teaching Methods:	
Lectures class notes, case studies, group work, problem-based learning.	
Total Teaching/Tutorial Contact Hours	36
Total Self-Directed Learning/Project Hours	64

Module Delivery Duration:
To be delivered in one semester three lectures per week.

Assessment
Continuous assessment 100%.
The learner and will be required to write and present reports based on a transport and logistics related topic.
Learners must achieve an aggregate of 40% across all elements of the assessment.

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Students are to Identify and engage with external industry partners in applied research projects	50%.	1 - 3

Presentation of industry collaboration research findings	25%	1 - 2
Presentation or assignment based on research methodologies sourcing, referencing data and publications	25%	3 - 4
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds	40%	
(c) Special Repeat Assessment Arrangements		

Essential Reading:

Denzin, N.K. and Lincoln, Y.S. eds., 2011. *The Sage handbook of qualitative research*. Sage.

Pelette, E 2016, “Cracking the Code to a Successful interview”.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Intermodal Transport Technologies 1					

School Responsible:	School of Transport Engineering Environment and Planning

Module Overview:

Intermodal Transport Technologies 1 introduces the student to the fundamental operation of the main systems in road transport vehicles, rail (locomotive, railcar and electric trains), marine (ships) and aircraft technology for both freight and passenger transport modes. It caters for students who may have little previous knowledge of intermodal transport technical systems.
The module covers the layout, construction and basic operation of technologies associated with the four transport modes in order to provide the required tractive effort, propulsion power and thrust.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Describe the layout, construction and basic operation of road transport vehicles.
2	State the function of the main vehicle systems in order to produce sufficient tractive effort.
3	Describe the layout, construction and basic operation of marine transport vessels (ships).
4	State the function of the ships main technical systems in order to produce sufficient propulsion power.
5	Describe the layout, construction and basic operation of aviation aircraft.
6	State the function of the aeroplanes main technical systems in order to produce sufficient thrust.
7	Describe the layout, construction and basic operation of rail transport traction vehicles, Locomotives, Diesel Multiple Units (DMUs), Electrical Multiple Units (EMUs) and Railcars.
8	State the function of the rail traction vehicles and how the main technical systems produce enough traction to enable the pull of carriages/wagons.

Indicative Syllabus:

12 Topics

1. **Road transport vehicles** – construction, layout and basic operation of passenger (M2, M3), goods vehicles (N2, N3, O3 and O4) type vehicles.
2. Road transport vehicles – function and operating principles of the main vehicle systems to include: Engine / fuel system, transmission (basic manual and automatic), axles, wheels and tyres, steering, suspension and braking systems.
3. Calculation of engine compression ratios, swept volumes, capacities, indicated and brake power, gearbox / axle ratios, overall tractive effort and distances moved.
4. **Marine (Ships)** - construction, layout and basic operation of passenger (ferries and liner) and freighter (RORO, LOLO, Bulk and tanker) ships.
5. Marine (Ships) - function and operating principles of the main vessel systems to include: 4 stroke diesel engines, fuel system (diesel), transmission (geared and direct), propeller and steering systems (rudder and thruster systems)
6. Calculation of ships volume, tonnage, buoyancy force, propulsion losses and effective torque.
7. **Aviation (Aircraft) -** construction, layout and basic operation of commercial aircraft both freight and passenger.
8. Aviation **–** principles and forces of flight, atmosphere and pressure, aerofoil wings, angle of attack, Bernoulli's principle.
9. Aviation - function and operating principles of the main aircraft systems including jet turbine engine, primary and secondary flight controls, how to achieve control and stability.
10. **Rail Transport (Vehicles)** - mechanical make-up, composition and operation of locomotives, self-powered passenger trains (DMUs and Railcars) and Electric trains -EMUs such as DART and LUAS.

11. **Rail Transport (Infrastructure)** – construction and maintenance of track, bridges, tunnels, stations and freight yards to strict engineering standards. Implementation and maintenance of signalling systems, including signalling centres and trackside infrastructure.
12. **Rail Transport (Infrastructure Maintenance Vehicles**) - mechanical make-up, composition and operation of track maintenance self-propelled rail vehicles, Tampers, Regulators and multi-purpose trackside repair vehicles

Learning and Teaching Methods:

This module will be delivered via the following format

- Lectures
- Case studies
- Group work
- Problem based learning

Total Teaching Contact Hours 1 two-hour lecture per week 1 single hour lecture per week	36 hours
Total Self-Directed Learning Hours	64 hours

Module Delivery Duration:

This module will be delivered over one semester

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
In class assessment. Assessment 1 – Week 6 (20 open ended short answer questions Topics 1-6 on road and marine technology)	20%	LO 1-4
In class assessment. Assessment 2 – Week 12 (20 open ended short answer questions Topics 6-12 on aviation and rail technology)	20%	LO 4-8
Final written examination 2 Hours duration – Answer any 4 of 6 Questions	60%	LO 1-8
Overall pass mark 40%		

Module Specific Assessment Arrangements (if applicable)	
(a) Derogations from General Assessment Regulations	None
(b) Module Assessment Thresholds	None
(c) Special Repeat Assessment Arrangements	1 repeat continuous assessment offered: 20 open ended short answer questions LO 1-8 (40%) Supplemental Examination (60%) LO 1-8

Essential Reading:

- Level 3 Heavy Vehicle Service and Maintenance Technician 9302: (2017) Apprenticeship Training Manual. City and Guilds, London.
- Duffy,C., Owen, Wright, Gus. (2015) Fundamentals of Medium – Heavy Vehicle Duty Commercial Vehicle Systems. CDX Automotive.
- Cumpsty. Nicholas, Heyes. Andrew (2015) Jet Propulsion, 3rd Ed. Cambridge University Press, London.
- Pemberton, R., Stokoe E A,. 2018, Naval Architecture for Marine Engineers, London
- Sanchez, B., 2017, An Introduction to Marine Engineering for Cadets and Officers, Oxford. London

- Designing & Managing Urban Railways, P. Connor, with N. G. Harris and F. Schmid, published by A & N Harris, London, 2015.
- The London Underground Electric Train, published by Crowood Press, London, 2015.

Supplemental Reading:

- Russell, P. Stoke E A. 2016, Ship Construction for Marine Engineers, 6th Edition. London.
- Modern Railways Magazine: Southern Class 377/6 Takes Shape - March 2013

Web references, journals and other:

Journal:

- World Cargo Handling (Monthly Magazine)
- Commercial Motor (Weekly Magazine)
- Fleet Magazine (Monthly)
- Modern Railways Magazine (Monthly)

Web:

- www.rsa.ie
- www.irha.ie
- www.ftai.ie
- www.CRR.ie
- WWW.NTA.ie
- WWW.irishrail.ie

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Introduction to Project Management					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

Current market environment is one of constant change, driven by technology & consumer behaviour. Transport operations must equip themselves with key capabilities and competencies in order to adapt to such changes. Project management skills are therefore becoming a crucial element of a company's management competencies. Project Management techniques are a key enabler to implementing effective change by following best practice whereby a structured approach to change implementation can reduce the risk of failure and deliver positive results for the business. Successful project outcomes will at least ensure projects are completed on time, in full and within budget. This module initially provides the student with an understanding of the knowledge required to plan for change and continues to educate the student in the techniques and methods of successful project planning, implementation, and evaluation. The structure of the module is based around a combination of behavioural skills and specific technical skill sets, which are required for competent project managers.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	State the key characteristics of a project
2	Recall the context for project management approach in a business change plan
3	Redefine a project management approach used in modern operational environments
4	Describe the modern tools used in project management
5	Recall the main components of effective communication skills required for successful project implementation
6	Describe the reasons relevant to successful / unsuccessful delivery of project outcomes

Indicative Syllabus:

Lectures will include the following subject areas:

1. Project definition with clear understanding of unique characteristics relevant to a project
2. Context for project management approach in delivering a successful business change plan
3. Consideration of project management constraints
4. Analysis of a project management technique
5. Awareness of project management tools
6. Understanding of risk mitigation and its role in project management
7. Group dynamics and its role in creating successful project teams
8. Description of reasons relevant to successful / unsuccessful project management outcomes

Learning and Teaching Methods:

Lectures
Class discussion
Group Working
Case Studies

Guest Lectures	
Total Teaching Contact Hours	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:
This module will be delivered over one semester

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Students will be tasked with completing a research based written assignment #1	30%	1-3
Students will be tasked with completing an in-class assessment in short written response and/or MC Quiz format	30%	4-6
Group project / poster presentation # 3	40%	1-6
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	Students who are referred in this module will be required to complete a supplemental written assignment LO 1 – 6 (100%).	

Essential Reading:

Harold Kerzner 2017, Project management: a system approach to planning, scheduling and controlling. 12th edition Wiley

Project Management Institute 2017, A guide to project management Body of Knowledge (PMBOK Guide). 6th edition Project Management Institute

Supplemental Reading:

Vijay K Verma 1997, Managing the Project Team (Human Aspects of Project Management, Volume Three). Project Management Institute

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Date of Academic Council approval…….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Principles of Transport Management					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

Transport managers play a key role in fulfilling promises to customers and in meeting those customers' expectations. They are responsible for managing the execution, direction, and coordination of all transportation matters within the organisation. Transport managers must use the organisations scarce resources as efficiently and effectively as possible to achieve the firms' goals and objectives. This module introduces the student to the subject of management and outlines the important skills and competencies required of todays' transport managers. The module provides a background for the student to develop management skills

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Describe the functions of management and the roles performed by management in the transport sector
2	Define the decision-making process and apply it to transport related problems
3	List the components a Transport Managers Operational plan
4	Describe how a SWOT and PEST analysis can be applied to a transport firm
5	State the staffing requirement of a transport firm
6	Recall the performance of firms operating in the transport sector by applying principles of control

Indicative Syllabus:

10 Topics

1. Introduction to Management
2. The history of management theory
3. Management functions –
    - Planning
    - Organising
    - Leading
    - Staffing
    - Controlling
4. Transport Managers as decision makers
5. Ethics, sustainability and social responsibility in transport
6. Fundamentals of operational and strategic planning in a transport environment
7. Developing a transport firms organisations structure
8. The role of transport managers as leaders
9. The human resource management role in a transport environment
10. The control process, quality control and benchmarking

Learning and Teaching Methods:

This module will be delivered via the following format

- Lectures
- Case studies
- Guest lectures
- Group work
- Problem based learning

Total Teaching Contact Hours 1 two hour lecture per week 1 single hour lecture per week	36 hours
Total Self-Directed Learning Hours	64 hours

Module Delivery Duration:
This module will be delivered over one semester

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Assessment 1 / Short Answer Questions and / or MC Quiz	25%	LO 1-3
Assessment 2 / Short Answer Questions and / or MC Quiz	25%	LO 4-6
Group Project / Presentation	50%	LO 1-6
Overall pass mark 40%		
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	None	

Essential Reading:
Siobhan D. Tiernan and Michael J. Morley 2013, *Modern Management, Theory and Practice for Students in Ireland*, 5th Ed. Ed., Gill & MacMillan
Rushton Alan, Croucher Phil and Baker Peter 2017 *The Handbook of Logistics and Distribution Management* 6th Ed Kogan Page Ltd

Supplemental Reading:
Stephen Robbins, Mary Coulter 2018 *Management* 14th global edition. Pearson Education Ltd

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	Nil	Nil			5	8
Module Title	Data Management and Analytics					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

The use of computers in any business is vital for lean and efficient operation. This module introduces students to database management software as used in the transport industry. It also provides students with spreadsheet skills which are required in the Logistics Sector. This module will address topics such as using spreadsheets and ethical use of databases for competitive advantage and decision making. This will assist them in their chosen career.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Explore database concepts and outline the benefits of various types of database models used to store data
2	Understand GDPR requirements and demonstrate professional and ethical responsibility for the legal management of data.
3	Design and modify field properties and size in a database that is suitable for use in the transport industry
4	Extract data, analyse data, run queries, print reports and forms from a database.
5	Design and populate a relational database apply SQL to query and modify data in a DBMS
6	Demonstrate competency in the use of spreadsheets for financial / business applications.
7	Customise mathematical and logical formulas using spreadsheet functions.
8	Use a spreadsheet package to create formulae and manipulate data for business calculations.
9	Use spreadsheet tools to import data from disparate sources and analyse same to produce insightful reports.
10	Use tools designed to help with forecasting and finding solutions to complicated problems involving your spreadsheet's data and formulas.

Indicative Syllabus:

MS Access Database: • Creating a new database • Customizing Fields and Tables. • Access procedures and components. • Modifying a database structure. • Form features and templates. • Finding and sorting records. • Extracting subsets of information for analysis. • Using Reports to present data.	**Excel Spreadsheets** Spreadsheet formulas, functions; printing, saving, editing; headers and footers; adding, deleting, naming and linking worksheets; creating and enhancing charts sorting spreadsheets; functions (sum, average, max, min, if function), Count functions; IF functions; Sumif; Forecasts & Trends; Introduction to Pivot Tables & Pivot Charts; Vertical & horizontal lookup; Data Sorting, Filtering; Subtotals; Conditional Formatting; Data Validation; Linking and Embedding; Worksheet Protection; Macros.

Learning and Teaching Methods:	
This module will be delivered by means of lectures, practical demonstrations, self-directed learning, computer-based learning	
Total Teaching Contact Hours 1 two-hour lecture per week for 12 weeks of the semester 1 two-hour tutorial per week	48
Total Self-Directed Learning Hours	52

Module Delivery Duration:
This module will be delivered over one semester and will require four hours of class contact per week for the duration of that semester.

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Continuous assessment x 4 (25% each) Assessment will take place on completion of each relevant section.	100%	
Databases written assignment	25%	1 & 2
Databases in class assessment	25%	3, 4 & 5
Spreadsheets in class assessment	25%	6 & 7
Spreadsheets in class assessment	25%	8, 9 & 10

Module Specific Assessment Arrangements (if applicable)

(a) Derogations from General Assessment Regulations	None
(b) Module Assessment Thresholds	40% in each assessment.
(c) Special Repeat Assessment Arrangements	None

Essential Reading:

John Pierce, 2017," MOS 2016 Study Guide for Microsoft Access" Microsoft Press, U.S.

Supplemental Reading:

Web references, journals and other:

https://www.dit.ie/media/ittraining/msoffice/MOAC_Access_2016.pdf

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	Nil	Nil			5	8
Module Title	Science Fundamentals for Transport					

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

School Responsible:	School of Transport Engineering, Environment and Planning

Module Overview:

Mathematics and Science is at the heart of all engineering subjects. This module introduces students of all levels of experience or confidence in maths, to fundamental scientific principles and their applications in transport technology. It caters for students who may have little previous knowledge of this subject and is designed to teach them the importance of science and engineering in all modes of transport. It will provide students with a solid grounding in these subjects that will be built upon by other technology and science related modules later in the programme. It will also equip students with the basic mathematical skills required to solve related problems.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Demonstrate a satisfactory understanding of the fundamental scientific and engineering principles outlined under Indicative Syllabus below.
2	Recognise relevant applications in transport technology of the scientific and engineering principles outlined under Indicative Syllabus below.
3	Explain and illustrate applications in transport technology of the scientific and engineering principles outlined under Indicative Syllabus below.
4	Perform calculations, analyse and solve basic problems involving the application to transport technology of the scientific and engineering principles outlined under Indicative Syllabus below.
5	Engage in independent self-directed learning in order to successfully complete assignments.

Indicative Syllabus:

Use of scientific calculator.
SI System of units. S.I. & Imperial Units. Unit conversions.
Manipulation and transposition of formulae and equations. Solving linear equations.
Areas and volumes of regular shapes.
Percentages. Ratios & Proportion. Indices.
Types of force. Moment of a force. Effects of a force. Pressure and Area. Friction
Newton's law of motion. Force, Weight and Mass. Gravity.
Rectilinear motion, displacement, velocity, and acceleration. Rectilinear motion formulae.
Angular motion, Relationship between linear and angular motion.
Work & Power.
Friction.
Mechanical efficiency.
Types of Energy
Heat transfer, Effects of heat, Sensible and Latent Heat, Specific heat capacity.
Gas Laws: pressure, volume and temperature.
Thermal Expansion.
Concept of a heat engine.
Calorific Value of a Fuel. Density and Relative Density

Learning and Teaching Methods:	
A combination of Lectures, Tutorials, and Self-Directed Learning involving Demonstrations, Problem Solving Exercises, and Assignment work supported by bespoke class notes and other learning material available to the student via Brightspace**.**	
Total Teaching Contact Hours **1 two-hour lecture per week for 12 weeks of the semester** **1 two-hour groupwork tutorial per week for 12 weeks of the semester**	48
Total Self-Directed Learning Hours	52

Module Delivery Duration:
This module will be delivered over one semester and will require four hours of class contact per week for the duration of that semester.

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Written End-of-Term Assignment	60%	1, 2, 3, 4 & 5
Assignment / in class assessment.	40%	1, 2, 3, & 4
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	40% in both the Examination and the Assignment/Coursework	
(c) Special Repeat Assessment Arrangements	None	

Essential Reading:
Bonnick, Allan. (2008) Automotive Science and Maths; Butterworth – Heinemann, Oxford.

Supplemental Reading:
Zammit, S.J. (1996) *Motor Vehicle Engineering Science for Technicians*, Addison Wesley Longman Ltd., London

Web references, journals and other:

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	**International Maritime Logistics**					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

As the overwhelming majority of cargo involves an element of maritime procedures, the management of port and maritime operations have evolved to become key issues for traders, either directly or indirectly involved in international trade. This module is designed to develop students' knowledge and understanding of the maritime sector.

The module will analyse the subject under the topics of port operations and shipping operations to allow the students explore the topics in depth. As the maritime sector is a multidisciplinary sector, the module will embrace a systems perspective to cater for the various elements of maritime operations.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Examine the practices and procedures associated with port and shipping line (deep & short sea) operations.
2	Interpret the worth of an effective maritime operation for the micro and macro-economic environment.
3	Define the differing characteristics of port ownership and management to that of shipping operators.
4	Indicate the significance of a highly integrated port and shipping line operation and relationship.
5	Describe the performance of ports and shipping lines with regard to standardised KPI's.
6	Illustrate possible future developments in the maritime sector.
7	Associate the maritime industry with the development and success of global sustainability initiatives.

Indicative Syllabus:

Two Strands;

Port Operations & Management: Port ownership, strategic alliances, types of port, port facilities and equipment, port services, performance management (productivity, utilisation, load/discharge rates, VTT), ports and hinterland logistics, port ROI.

Shipping Operations & Management: Vessel types, operations, vessel operations, vessel financing and ownership, chartering and charter party agreements, regulatory influences, i.e. MARPOL, SECA, strategic alliances, demand forecasting, route analyst, general average, Worldscale, spot rates, brokering, ethical treatment of crew.

Learning and Teaching Methods:

This module will be delivered via the following format

1. Lectures
2. Group discussion
3. Audio/visual aids
4. Site visits
5. Case studies
6. Authentic problem-based learning

Total Teaching Contact Hours	

1 two-hour lecture per week 1 single hour lecture per week	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:
This module will be delivered for one semester for 3 hours per week.

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Continuous Assessment 1 – Presentation (group) – Week 11. (Topic related to the maritime industry and its response to the green agenda).	50%	LO 1 - 7
End of semester written examination; 2 Hours duration – Answer any 4 of 6 Questions	50%	LO 1 - 6
Overall pass mark 40%		
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	1 repeat continuous assessment offered: 2000-word essay - LO 1- (50%) Supplemental Examination (50%) LO 1-6	

Essential Reading:

Song, D. and Panayides, P. (2015). Maritime Logistics; A guide to contemporary shipping and port management, 2nd Edition. London: Kogan Page.

Supplemental Reading:

Bichou, K. (2020). *Port Operations, Planning and Logistics, 2nd Edition*. London: Informal Law.

Branch, A. (2014). *Elements of Shipping, 9th Edition.* New York: Routledge.

Caliskan, A. and Esmer, S. (2020). *An assessment of port and shipping line relationships: the value of relationship marketing.* Maritime Policy & Marketing, Vol. 47, Issue 2, pp.240-257.

Institute of Chartered Shipbrokers. (2012). *Port and Terminal Management*. London: ICS.

Johnson, H. and Styhre, L. (2015). *Increased energy efficiency in short sea shipping through decreased time in port.* Transportation Research Part: Policy and Practice, Vol. 71, pp.167-178.

Nunes, R., Alvim-Ferraz, M., Martins, F and Sousa, S. (2017). *Assessment of shipping emissions on four ports of Portugal.* Environmental Pollution, Vol. 231, pp.1370-1379.

Song, D. and Panayides, P. (2012). *Maritime Logistics; A complete guide to effective shipping and port management*. London: Kogan Page.

Stopford, M. (2008). *Maritime Economics (3rd ed.).* London & New York: Routledge.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
AOPS1001		NIL			5	8
Module Title	Airport and Airline Operations					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:
This is a hybrid module which introduces students to the operation and administration of airport facilities and it will identify the airports operational systems, future strategic planning, economic, sustainability and future expansions. The module will also recall the common managerial errors associated with general aviation management and team structures. Students will have a basic knowledge of the concepts of yield management, legislative requirements of airline operations, future environmental and economic challenges that faces the industry.

Learning Outcomes (LO): (to be numbered)	
On Completion of this module, the learner will be able to	
1	Define the Airport Act regulated by the Department of Transport, Tourism and Sport
2	Describe the airport technical services and identify future strategic planning
3	Define the airport as a sustainable operational system.
4	Describe the management and team structures of a medium sized airline.
5	Describe how a small airline can market research, budget and monitor its effectiveness.
6	Recognise the areas of training which cabin crew are required to complete.

Indicative Syllabus:
1. Describe the fundamentals of the Airport Act, and the role of policy makers and industry stake holders 2. Define the technical services, strategic planning, economic sustainability and growth of an international airport 3. Define airport operational systems, air traffic control, accident and emergency planning, security, air cargo fuel management and customs operations 4. Describe the management structure of a medium sized airline. 5. Recognise and understand the concepts of Yield management 6. State how a small airline can set a budget and the means of monitoring its effectiveness whilst recognising the need for market research in general aviation 7. State the training methods for cabin crew and cockpit crew resource management training.

Learning and Teaching Methods:	
Lectures class notes, case studies, group work, problem based learning, sight and industry visits.	
Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	64

Module Delivery Duration: 18 hours – Airport Operations, 18 hours – Airline Operations
To be delivered in one semester four lectures per week.

Assessment
End of semester exam: 70%, Assignment x 2: 30%

Learners must achieve an aggregate of 40% across all elements of the assessment.		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Assignment x 2 Assignment /presentations	30%.	1 – 6
End of semester written exam or MCQ	70%,	1 – 6
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements		

Essential Reading: McGraw Hill Airside Safety Management Civil Aviation Authority, 2018
Ashford, N. et al, Airport Operations, 2012,
Gerald N. Cook, Bruce Billig Airline Operations and Management: A Management Textbook, 2017

Supplemental Reading:
Dublin Airport Capital Investment Programme 2020 + (2018)

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……..

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Introduction to Sustainable Transport					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

Sustainable transportation is the capacity to support the mobility needs of a society in a manner that is the least damaging to our environment while at the same time does not impact adversely on the transport and mobility needs and requirements of future generations. Sustainability has increasingly focused on the needs of our cities in particular but also on rural environments. Both require supporting infrastructures including energy, water, and transport. A key to transport sustainability issues is linked with the provision and maintenance of a wide range of infrastructure. Many countries have deficiencies in the provision of the most basic infrastructure while their environmental conditions are deteriorating. This introductory module looks at the issues and problems of transport sustainability and makes suggestions how these issues can be tackled and solved.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	State the meaning of transport sustainability and its component parts
2	List the problems affecting transport sustainability in a modern environment
3	Describe the impact of climate change and its impact on transport sustainability
4	List and describe possible solutions to overcome the needs of modern society regarding transport sustainability

Indicative Syllabus:

1. History of sustainable and unsustainable transport
2. The car culture and car dependence
3. Climate change and the impact on our world
4. Congestion and sustainability
5. Transport, energy and the environment
6. The role of transport planning and policy
7. Transport infrastructure and sustainability
8. Intelligent transport systems

Learning and Teaching Methods:

This module will be delivered via the following format

- Lectures
- Case studies
- Guest lectures
- Group work
- Problem based learning

Total Teaching Contact Hours 1 two hour lecture per week 1 single hour lecture per week	36 hours

Total Self-Directed Learning Hours	64 hours

Module Delivery Duration:
This module will be delivered over one semester

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Individual Assignment / in class assessment / MC Quiz	25%	LO 1-2
Individual Assignment / in class assessment / MC Quiz	25%	LO 3-4
Group Project / Presentation	50%	LO 1-4
Overall pass mark 40%		
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	None	

Essential Reading:

Preston L. Schiller, Eric Bruun, Jeffrey R. Kenworthy 2013, An Introduction to Sustainable Transportation, Earthscan Publications Ltd.
Black William. 2010, Sustainable transportation: problems and solutions. Guilford New York
Lisa Ryan 2007. Sustainable automobile transport: shaping climate change policy Cheltenham

Supplemental Reading:

Dept. of Transport (Dublin) *Smarter Travel – A Sustainable Transport Future, A New Transport Policy for Ireland 2009-2020*, A Sustainable Transport Future, A New Transport Policy for Ireland 2009-2020

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Fundamentals of Transport Policy and Economics					
School Responsible:	School of Transport Engineering Environment and Planning					

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module introduces the student to the subject of transport economics and current transport policies and their impacts in transport markets. The nature and characteristics of transportation systems are investigated and include an examination of the objectives, roles and functions of various groups of actors (government, transport providers, transport users) in the transportation system. The demand and supply for transport and transport services are explored in relation to economic policy and objectives.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Describe the nature and characteristics of transport policy in Ireland
2	State the role of government in developing transport policy
3	Recall the costs and benefits associated with different forms of transport regulation policies
4	Define the supply and demand functions of transport and the determination of price, equilibrium price, elasticity,
5	List and describe different transport market structures including, (perfect competition, imperfect competition, monopoly, oligopoly).

Indicative Syllabus:

1. History of transport policy in Ireland
2. The integration of transport systems (rural and urban)
3. Private and public ownership of transport systems.
4. Integration of transport and land use (transport infrastructure)
5. Examination of the relationship between transport and economic activity
6. Market structures and underlying economic characteristics of transport markets
7. Supply and demand in transport markets
8. The determination of price and the role of elasticity in transport markets
9. The economies of transport and the environment

Learning and Teaching Methods:

This module will be delivered via the following format

- Lectures
- Case studies
- Guest lectures
- Group work
- Problem based learning

Total Teaching Contact Hours 4 hours class contact per week	48 hours
Total Self-Directed Learning Hours	52 hours

Module Delivery Duration:

This module will be delivered over one semester

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Short answer questions and / or MCQ	25%	LO 1-3
Short answer questions and / or MCQ	25%	LO 4-5
Group Project / Presentation	50%	LO 1-5
Overall pass mark 40%		
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	None	

Essential Reading:

Class Lecture Notes
Cowie Jonathan. 2010 *The Economics of Transport* Routledge
Spurling David. 2010 *Introduction to transport economics* Universal Publishers
Cole Stuart. 2005. *Applied Transport Economics*. London : Kogan Page 3rd ed.

Supplemental Reading:

Elgar Edward 2011 *A handbook of transport economics*. Cheltenhan
NCC Ireland www.competitiveness.ie
Dept of Transport www.gov.ie
National Transport Authority www.NTA.ie
Engineers Ireland: State of Ireland annual report

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Date of Academic Council approval ……

YEAR 2

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None		ROPS2000	5	8
Module Title	Transport Law & Legislation					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This year 2, semester 1 module gives the students an opportunity to delve deep into the concept of transport legislation by exploring and analysing applicable laws, legislation and conventions that imping on the operations and structure of the transport activity, with a particular emphasis on contracts of carriage. The module will evaluate applicable legislation from various stakeholder viewpoints including carrier and vendor.

The module aims to equip the student with the capability and confidence to take a managerial view regarding legislation affecting transport operations.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Explain the potential impact of legislation at an operational, tactical and strategic level.
2	Demonstrate a thorough knowledge and understanding of the regulatory environment in which the transport industry exists.
3	Evaluate information, data and knowledge to confidently and appropriately make decisions, judgments and recommendations regarding transport operations and legislation.
4	Illustrate the role of legislation with regard to conflict resolution and arbitration.
5	Construct a reasoned argument as to how legislation can be used as a source of competitive advantage.
6	Correlate legal compliance and a long-term business outlook.

Indicative Syllabus:

5 Topics;

1. Road Transport: Convention on the Contract for the International Carriage of Goods by Road (CMR).
2. Rail Transport: CIM, CIV.
3. Air Transport: Montreal Convention, Warsaw Convention.
4. Sea Transport: Hague-Visby Rules, Hamburg Rules, Rotterdam Rules, COGSA, MARPOL.
5. E-commerce and Transport implications; Directive 2011/83/EU (consumer rights).

Learning and Teaching Methods:

This module will be delivered via the following format

1. Class lectures
2. Student led discussions
3. Case studies
4. Group work
5. Problem cased learning

Total Teaching Contact Hours 1 two-hour lecture per week 1 single hour lecture per week	 36
Total Self-Directed Learning Hours	64

Module Delivery Duration:
This module will be delivered for one semester, 3 hours per week.

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Continuous Assessment 1 - Group work. Week 12 – case study analysis relating to non-compliance of legal requirements and the resultant effect on customer relationship on a short- and long-term basis. Report and presentation. Topics 1-5	Report (30%) Presentation (20%)	LO 1 - 6
Final written examination, 2 Hours duration – Answer any 4 of 6 Questions	50%	LO 1 - 5
Overall pass mark 40%		
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	NONE	
(b) Module Assessment Thresholds	NONE	
(c) Special Repeat Assessment Arrangements	1 repeat continuous assessment offered: 2000-word essay (50%) Supplemental Examination (50%) LO 1-5	

Essential Reading:

Glass, D. (2012). *Freight Forwarding and Multimodal Transport Contracts, 2nd Edition.* London: Taylor and Francis.

Supplemental Reading:

Canny, J. (1999). *The law of road transport and haulage*. Dublin: Round Hall Sweet and Maxwell.
Berlingieri, F. (2009). *A Comparative Analysis of the Hague-Visby Rules, the Hamburg Rules and the Rotterdam Rules*, in International Conference on eCommerce and ePayments, Marrakech, Morrocco.
Branch, A. (2014). *Elements of Shipping, 9th Edition.* New York: Routledge.
Clarke, M. (2010). *Contracts of Carriage by Air*, *2nd Edition.* London: Lloyds List.
Law, J. (2018). *A Dictionary of Law, 9th Edition*. Oxford: Oxford University Press.
Lowe, D. and Pidgeon, C. (2019). *Lowe's Transport Manager and Operations Handbook, 2019, 49th edition.* London: Kogan Page.
Pandele, A. (2017). *The International Carriage of Goods by Sea. A comparative study of uniform regulations.* Contemporary Readings in Law and Social Justice, Vol. 9. No. 2, pp. 259-265.
Sefara, A. (2016). *The structure of carrier's liability and burden of proof under the united nations convention on contracts for the international carriage of goods wholly or partly by sea (2009)*. Australian Journal of Maritime and Ocean Affairs, Vol. 8 No. 3, pp.199-205.
Wilson, J. (2010). *Carriage of Goods by Sea, 7th Edition*. Essex: Pearson Education Ltd.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	**8**
Module Title	**Intermodal Transport Technology 2**					

This Header should be repeated on each page of the Module

School Responsible:	Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:
This module introduces the student to the construction and operation of various technology-based vehicle systems, components and units used across the various Transport modes in industries such as Road, Rail, Marine and Aviation.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Describe the basic function, layout and operation of a Road Vehicles Transmission, Suspension, Steering and Brake system.
2	State the need for a proper maintenance programme in respect of a road vehicles running gear and transport assemblies, to include CVRT testing, and the implications associated with Health and Safety.
3	Describe the operating principles of the marine low speed 2 stroke diesel engine and advantages of dual fuel systems (diesel and gas) in respect of **IMO TIER III** emission standards.
4	Predict and discuss the causes of engine crankcase explosions and describe the measures to prevent such incidents occurring.
5	illustrate potential fuel and running cost savings by utilising various waste heat recovery systems from the main engine propulsion systems.
6	Describe the operating principles of the jet turbine engine (Brayton cycle) and the main engine sections – compressor section, combustion can, turbine section.
7	Illustrate the main types of jet engine used in commercial aircraft i.e. pure turbo jet, centrifugal and axial compressor engines, low bypass engine, high bypass turbo fan engine
8	Comprehend the basic operation of the aircraft fuel system, engine air start system, APU and use of sustainable jet engine fuels.
9	Describe the basic function, layout and operation of the three main traction vehicles utilised on today's modern railway systems, namely Locomotives, Diesel Multiple Units (DMUs) and Electric Multiple Units (EMUs – DART)
10	Outline reasons for the importance of adhering to a stringent and well document regime of all rail vehicles, both traction and carriages and wagons
11	Illustrate and discuss the importance of the precision interfaces between all rail vehicles and the civil rail infrastructure it operates on – track and signalling

Indicative Syllabus:

Topics:

- The basic function, layout and operation of a Road Vehicles Transmission, Suspension, Steering and Brake system.
- Health and Safety implications and precautions to be taken when maintaining, overhauling and repairing road vehicles.
- The procedure of vehicle testing at various levels (RSA, CVRT, NCT) and maintaining a proper maintenance programme.
- TIER I, II and III emission levels for marine operations and its implications for civil shipping.

- The principles of operation of the marine 2 stroke low speed diesel engine and dual fuel (diesel cycle) system (diesel/gas).
- Health and safety issues with marine engine crankcase explosions and prevention measures.
- Waste heat recovery systems from the main engine such as turbocharging, boilers, steam turbines and power generation.
- Principles of operation of the jet turbine engine (Brayton cycle) and function of the main engine sections - compressor section, combustion can, turbine section.
- Main jet engine types i.e. pure turbo jet, centrifugal and axial compressor engines, low bypass engine, high bypass turbo fan engine and most efficient identified.
- The basic operation of the aircraft fuel system, engine air start system, APU and use of sustainable jet engine fuels.
- The basic function, layout and operation of Rail Vehicles transmission, suspension and braking systems
- Health and Safety implications and precautions to be observed whilst maintaining, overhauling and servicing rail vehicles - Locomotives, DMUs, EMUs Carriages and Wagons
- Principals of operation of self-propelled track maintenance machines – Tampers Regulators and Ballast cleaning vehicles.

Learning and Teaching Methods:

This module is theoretical and may incorporate some practical elements.
The module will be conveyed via formal lectures, tutorials, supplemented by structured classroom discussions and Guest lectures. Demonstrations may be used to reinforce theoretical principles.

Total Teaching Contact Hours	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:

Module is delivered over 3 contact hours per week for 12 weeks.
Each mode (Road, Aviation, Marine and Rail) will be taught for 3 weeks out of the 12-week semester

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Formal End of Module Examination Final Written Exam 2 hours duration_ Answer 3 of 5 questions (question 1 is compulsory and two others)	60%	Lo 1-11
Continuous Assessment worth: Assessment 1 Road and Rail 20% Assessment 2: Aviation and Marine 20%	40%	 Lo 1-2/9-11 Lo 3-8
Overall Pass mark 40%		
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements		

Essential Reading: Learners will be provided with bespoke class notes.

1. Heisler, Heinz, Advanced Vehicle Technology, 3rd Edition, Butterworth Heinemann, England.
2. Nunney, M. J. (2007) Light and Heavy Vehicle Technology, 4th Edition, Butterworth-Heinemann, Oxford.
3. Cumpsty. Nicholas, Heyes. Andrew (2015) Jet Propulsion, 3rd Ed. Cambridge University Press, London.
4. Pemberton, R., Stokoe E A, 2018, Naval Architecture for Marine Engineers, London

5. Sanchez, B., 2017, An Introduction to Marine Engineering for Cadets and Officers, Oxford. London
6. Connor Piers. The London Underground Electric Train, published by Crowood Press, London, 2015.
7. McDonnell Greg. Locomotives: The Modern Diesel & Electric Reference.
8. Simson Walter. Diesel-Electric Locomotives – How They Work, Use Energy, and Can Become More Efficient and Environmentally Sustainable

Supplemental Reading: (author, date, title, publisher)

1. Hillier, V.A.W. and Coombes, Peter, (2008), Fundamentals of Motor Vehicle Theory, 5th Edition, Nelson Thornes Ltd.
2. Lester David C. Review of (2019) Diesel-Electric Locomotives – How They Work, Use Energy, and Can Become More Efficient and Environmentally Sustainable, Railway Age, Railway Track and Structures.

Web References:
Google Scholar
www.autoshop101.com
www.auto-solve.co.uk
www.autospeed.com
www.imo.org (International Maritime Organisation)
www.crr.ie
www.irishrail.ie

Journals;
Automotive Engineering International, SAE International
Transport Engineers, Institute of Road Transport Engineers.
Modern Railways
Today's Railways

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Human Factors in Transport					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:	
On completion of this module, the learner will be able to understand and describe human factors issues in all areas of Transportation and their impact. Specifically; the learner should know the theory of the subject and its interrelationships with other subjects, be able to give a detailed description of the subject using theoretical fundamentals and specific examples, be able to read, understand and prepare sketches, describing the subject, be able to apply his/her knowledge in a practical manner.	
Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	**General Human Factors;** Explain the need to take human factors into account in the Transport industry. Apply this knowledge when analyzing accident and investigation reports.
2	**Human Performance and Limitations;** Explain the theoretical fundamentals of information processing, attention, perception and memory. Apply this knowledge when describing how vision, hearing, information processing, attention & perception, memory & claustrophobia & physical access are affected by the environment.
3	**Social Psychology;** Give a description of the basic elements of individual & group responsibilities, motivation & de-motivation, peer pressure, 'cultural' issues, team working, management, supervision and leadership in Transport & Logistics.
4	**Factors Affecting Performance;** Explain how time pressures and deadlines affect the workload and the effects of domestic / work-related stress. Give a general description of sleep and fatigue, shift work.
5	**Communication;** Give a general description of communication within and between teams. Apply this knowledge in preparing sample servicing schedules and task planning.
6	**Human Error;** Explain the fundamental error models and theories used in Transport Apply this knowledge to both avoiding and managing errors.
Indicative Syllabus:	
Indicative syllabus covered in the module and / or in its discrete elements ➢ General Human Factors ➢ Human Performance and Limitations ➢ Social Psychology ➢ Factors affecting Performance ➢ Physical Environment ➢ Communication ➢ Human Error ➢ Hazards in the workplace	

Learning and Teaching Methods:	
Statements about the various types of learning and teaching methods that are used in the delivery of the module: ➢ Module Lectures ➢ Accident and Investigation Case Studies / Video presentations ➢ Class discussions ➢ A combination of methods including lectures, tutorials, discussion and analysis of published aircraft / Transport accident causality/investigation reports will be utilized. Particular emphasis will be placed on active learning including self-directed, work based and project based learning.	
Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	52
Module Delivery Duration:	
Indicate if the module is normally delivered for example over one semester or less, or over one academic year etc ➢ Module delivered over 1 Semester, 24 two hour lectures.	
Assessment	

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Mid-term assignment / report	30%	1 -4
End of Module written examination	70%	1 - 9
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	None	

1

Essential Reading: (author, date, title, publisher)

Lecture notes.
CAP 715 - An Introduction to Aircraft Maintenance Engineering Human Factors, Civil Aviation Authority 086039834 X
JAA, (2008). *Crew Resource Management Training*, California Training Institute.

Supplemental Reading: (author, date, title, publisher)

CAP 716 - Aviation Maintenance Human Factors, Civil Aviation Authority 0860398323
Mac Load, N. (2005). *Building Safe Systems in Aviation. A CRM Developers Handbook*. Ashgate.
Jensen, R. Trollip, S. (1991). *Human Factors for General Aviation*. Jeppesen
Air Disasters, ISBN 1-85648-182-4
Aviation Safety Programmes, ISBN 0-88487-236-X Chernobel, The Final Warning, ISBN 0-241-12185-X Human Factors & Pilot Performance, ISBN 1-84037-166-8
Wiehmann, D. Shappell, S. (2003). *A Human Error Approach to Aviation Accident Analysis, The Human Factor Analysis and Classification System*, Ashgate

Version No:	1	**Amended By**	Aidan Rooney
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.
Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
WOPS 2000					5	8
Module Title	Rail Operations					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:
This Module deals with all aspects of railway operations. It develops aspects of the design of passenger and freight facilities and describes the use of modern IT technology as applied to the railway. The module will enable the students to develop their professional skills in the area of railway operations procedures.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Describe the design of a modern railway station and list the facilities required. Describe the differences in stations designed for mainline passenger services and urban/suburban passenger services.
2	Illustrate the planning process involved in the provision of passenger train services. Discuss the use of computer technology in the planning of passenger train operations. Describe the steps involved in preparing a passenger train timetable and crew rosters
3	Recall the main reports on the railway in Ireland produced over the past fifty years. Discuss the main conclusions of these reports
4	Describe the main recommendations of recent National Development Plans, relating to the role of the railway in Ireland.
5	Describe the evolution of railway safety in Ireland. Discuss the impact of the main Railway Acts on railway safety. Discuss the role of the Commission for Railway Regulation (CRR)
6	Show the design of a modern railway freight terminal or depot. List the facilities required for handling bulk traffic such as mineral ores.
7	Describe the planning process involved in the provision of freight train services. Discuss the use of computer technology in the planning freight train operations. Describe the steps involved in preparing passenger and freight train timetables and crew rosters
8	Recall the level of investment in the railway in Ireland in recent years. Describe the benefits of this investment from the point of view of the mainline rail passenger and from the point of view of the rail commuter. Describe the main differences between a financial analysis and a cost benefit analysis for a proposed railway investment.
9	Describe railway privatization and other railway re-organisation options as adopted by various countries.
10	Predict the future of the railway system in Ireland. Describe recent trends in rail passenger carryings and freight tonnage. Describe trends in road traffic levels. Describe transport externalities and the role of the railway in reducing adverse externalities.
11	Describe railway maintenance procedures for locomotive s and for diesel multiple units and electric multiple units.

Indicative Syllabus:

Passenger Railway Station Design
Railway Passenger Operations
Review of Various Reports on Irish Rail
Railway Safety
Rail Freight
Terminal Design
Railway Freight Operations
Review of Investment in Irish Rail from 2000 to date
Review of Railway Re-organisation Options
Future Prospects for Irish Rail

Learning and Teaching Methods:

The module will be delivered through lectures and site visits.

Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	52

Module Delivery Duration:

The module will be delivered over one semester for four hours per week.

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
End of semester written examination/MCQs	60%	1-11
Written assignment based on a site visit to a railway facility such as a station, control centre or freight depot/MCQ	40%	1-11
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements		

Essential Reading:

Class lecture notes

Pyrgidis, C.N., 2016. *Railway Transportation Systems: Design, Construction and Operation*. CRC press.

Glover, J., 2013. *Principles of railway operation*. Ian Allan.

Bonnett, C. F. 2005. *Practical Railway Engineering.* 2nd Ed., Imperial College Press

Supplemental Reading:

Kichebside, G., 1998 *Two centuries of Railway Signalling, Oxford Publishing*

www.irishrail.ie
WWW.NTA.ie

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
TMKT 4000	None	None			5	8
Module Title	Transport Marketing					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

The focus of a firms marketing efforts seeks to build profitable customer relationships and the marketing of goods and services is an essential business function in today's economic competitive environment. Having a robust marketing function and process is key to transport firm's attainment of a sustainable competitive advantage and ensuring customer satisfaction. This module looks at the principles of marketing, and how marketing strategies can be used by transport companies to retain existing customers and entice new ones. Marketing is a key driver to enhance performance and profitability of the firm.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Define the importance of marketing to a modern transport firm to create and capture customer value and describe how the firms marketing strategy is formulated and implemented
2	State how the macroenvironment and microenvironment impact on a transport firm and predict the importance marketing information and intelligence to a transport firm
3	Define customer buying behaviour and describe how transport firms develop new products and services and illustrate how transport firms brand their products and services
4	Describe how transport firms devise pricing strategies and explain their distribution and Supply Chain strategies.
5	State the key importance of e-marketing to a transport firm is today's environment and describe a transport firms promotion strategies and choices.

Indicative Syllabus:

- Principles transport of marketing / the marketing mix
- Transport Marketing strategy
- The Marketing environment
- Marketing information and intelligence
- Creating value for customers, customer satisfaction and customer service index
- Branding of products and services for transport markets
- Developing new products and the product and service life cycle
- Transport market Pricing strategies
- Marketing channels and distribution management
- Transport Marketing Promotion and advertising
- eMarketing in Transport

Learning and Teaching Methods:

A range of approaches will be utilised including lectures, group discussions, and presentations

Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	52

Module Delivery Duration:
This module will be delivered over 1 semester

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Individual Assignment / in class assessment / MC Quiz Individual Assignment / in class assessment / MC Quiz	25% 25%	LO 1-5 LO 6-10
Group Project / Presentation	50%	LO 1-10
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	None	

Essential Reading:

Class Lecture notes
Philip Kotler 2020 *Principles of Marketing* Pearson 8th European Ed
Armstrong Gary 2020 *Marketing: an Introduction* Pearson, 14th Global Edition.

Supplemental Reading

Wirtz Jochen 2018 *Essentials of Services Marketing* Pearson 3rd Global edition

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Financial Management 1					

School Responsible:	School of Transport Engineering Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module introduces the student to the importance and relevance of financial accounting in supplying management with reliable and timely financial information relating to operating and investment decisions and also relating to important legal and tax compliance aspects that arises from incorporation of a business.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Appreciate the underlying system of maintaining accounting records and the traceability of transactions to supporting source data.
2	Prepare financial statements from a summary trial balance of a small company.
3	Understand the form and content of full financial statements.
4	Comprehend the results of companies by ratio analysis
5	Appreciate the importance of good credit control procedures in the timely securing of cash flows from sales made to customers on credit.
6	Understand the various sources of finance available to a business in Ireland and understand how the mix of sources should be tailored to the funding requirements of the company.
7	Understand the differences ,both legal and practical, of the types of business entity through which a trade can be carried on (limited companies, sole traders and partnerships).
8	Determining optimal capital structure - the use of debt and equity to fund long term assets.

Indicative Syllabus:

- Principles of Double Entry system for recording of transactions entered into by a business.
- Explanation of subsystems in an accounting system: Sales Ledger, Purchases Ledger, Cash Book and General Ledger.
- Key reports from an accounting system: Trial Balance, Profit and Loss Account and Balance Sheet
- Timing adjustments: Closing stocks, provisions & accruals and prepayments.
- Depreciation methods to eliminate fixed asset costs from the balance sheet over useful life.
- Explanation of the Limited Liability Company form of organization. How formed, important legal and tax compliance matters to be attended to. The safeguards arising from Limited Liability status.
- Financial Statements of Limited Companies – form and format of full statutory accounts.
- Preparation of financial statements of small trading companies.
- Interpretations of financial statements – evaluation of performance and financial position by use of ratio analysis (solvency, profitability and activity ratios).
- Cash Flow Statements as means of reconciling the trading results to movements on bank and cash balances, both adverse and favourable.
- Sources of finance available to businesses – short term and long term - nature, interest cost, security aspects, legal title (particularly in relation to assets funded by Hire Purchase and Leasing).
- Security of loans and advances – Fixed and Floating charges – registration – impact of order of repayment in a winding up of a company.
- Capital Structure of a company – review and evaluation of the use of debt by ratio analysis: Gearing ratio, Times Interest Covered and Earnings Per Share.
- Principles of credit control – proper documentation flow supporting a credit transaction – maintenance of sales ledger – evaluation procedures of new and potential customers – monitoring compliance of existing customers.

Learning and Teaching Methods:	
By class contact. Presentations are made using Power Point and similar presentation methods. Active preparation of solutions to questions on the wipe board in class. It is expected that the students will prepare solutions to some questions in advance of class. Lectures supplemented with tailored question packs for which all solutions will be actively worked through.	
Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	76

Module Delivery Duration:
2 Semesters (throughout the academic year)

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Examination	100	1,2,3,4,5,6,7,8.
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	n/a	
(b) Module Assessment Thresholds	n/a	
(c) Special Repeat Assessment Arrangements	n/a	

Essential Reading:
"Accounting For Non Accounting Students", J.R. Dyson (Prentice Hall)
"How To Read A Financial Report", John A. Tracy (Wiley)
"Financial Management", Kennedy McCormac & Teeling (Gill & MacMillan)

Supplemental Reading:
Periodicals: "Business & Finance"; "Irish Business"; "Sunday Business Post".

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Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Customs and International Trade					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

Customs play an enormously important role in any logistics and supply chain and this module allows participants to determine and assess the key functions and processes of international business transactions with an emphasis on customs-related controls, documentation and risk mitigation techniques.

As the global logistics industry continues to evolve and grow, its importance and significance in helping to reduce overall costs and the creation of value for customers and consumers cannot be underestimated. The interaction with customs controls, procedures and regulations can be detrimental to a firm if mishandled, but conversely can create a platform for competitive advantage if manged correctly.

The module gives students a strong foothold in dealing with border transactions, import/export documentation and offers an insight into the operational expectations and performance found in national and international procedures. The module will demonstrate the importance of customs to a society, and the role it can play in protecting the citizens and economies of a nation.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Review the relationship and interdependence of international trade and customs.
2	Analyse the role, function and impact of the EU, the World Trade Organisation (WTO) and the World Customs Organisation on international trade procedures and practices.
3	Examine international trading relationships and agreements.
4	Categorise and complete the applicable documentation and procedures for international trade and customs compliance.
5	Appraise the influencers and enablers of best practice in the global logistics sector with regard to customs procedures and practices.
6	Connect the relationship between business compliance, customs authorities and socioeconomics at a macro level.

Indicative Syllabus:

5 topics

1. International Trade and Customs; International trade patterns, the role of customs at a socioeconomic level, the power of customs, trade facilitation, risk management, profiling and mitigation, post-Brexit trade procedures and protocols.

2. National and International trading relationships and agreements; Customs Union, WTO, WCO, Single Market, Free Trade Agreement, 3rd Country Status, Common Travel Area.

3. Customs Laws and Procedures; Arrival system, Export and Import control system, AEP, ENS Declaration, eManifest, NCTS, SPS, EORI, AEO, Multi-agency checks, CITES, TRACES, HS codes, TARIC codes, Valuation and origin of goods, preferential treatment and agreements, customs tariffs, taxes and duty payment, Quotas, subsidies, Bonded warehousing, Duty Free Zones.

4. Customs Documentation; Customs clearance and free circulation, SAD, EAD, Community Transit Procedure, ATA Carnet, TIR, Supporting paperwork.

5. International Trade and Finance; Trade finance, international payments, Letters of Credit, Incoterms.

Learning and Teaching Methods:

This module will be delivered via the following format

- Lectures
- Problem based learning
- Group discussion
- Audio/visual aids
- Site visits
- Case studies

Total Teaching Contact Hours 1 two-hour lecture per week 1 single hour lecture per week	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:

This module will be delivered for one semester, 3 hours per week.

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Continuous Assessment – Group work – Process mapping of an import and export process for an Irish based trader, wishing to trade internationally. Data sets and variables specific to each group. Presentation and support documentation. Week 12.	Presentation 25% Supporting Documentation 25%	LO 1 - 6
End of semester written examination - 2 Hours duration – Answer any 4 of 6 Questions	50%	LO 1 - 6
Overall pass mark 40%		

Module Specific Assessment Arrangements (if applicable)	
(a) Derogations from General Assessment Regulations	None
(b) Module Assessment Thresholds	None
(c) Special Repeat Assessment Arrangements	1 repeat continuous assessment offered: 1500-word essay - LO 1 - 6 (50%) Supplemental Examination (50%) LO 1- 6

Essential Reading:

Lyons, T. (2018). *EU Customs Law, 3rd Edition*. UK: Oxford EU Law Library

Supplemental Reading:

Anouche, M. and Boumaaz, Y. (2019). *Customs risk management in developing countries: Foresight approach using big data.* International Journal of Innovation and Applied Studies. Vol. 26 Issue 1, pp. 58-68.
Drobot, E., Klevleeva, A., Afonin, P. and Gamidullaev, S. (2017). *Risk Management in Customs Control.* Economy of Region, Vol.13 Issue 2, pp. 551-558.
Elliot, D. and Bonsignori, C. (2019). *The influence of customs capabilities and express delivery on trade flows*. Journal of Air Transport Management, Vol. 72 Jan 2019, pp.54-71.
Johnson, T. and Bade, D. (2010). *Export Import Procedures and Documentation*. New York: AMA.

Martincusa, C., Carballo, J. and Grazianoa, A. (2015). *Customs*. Journal of International Economics, Vol. 96 Issue 1, pp.119-137.
NSAI. (2016). *The 'Blue Guide' on the implementation of EU products rules 2016*. Dublin: NSAI
Reuvid, J. and Sherlock, J. (2011). *International Trade: An essential guide to the principles and practice of export*. London: Kogan Page.
World Customs Organisation. (2011). *Risk Assessment/Targeting Centres - Study Report*. Brussels: WCO.
WTO. (unknown). *Trade Facilitation Agreement - Easing the flow of goods across borders*. Geneva: WTO.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Warehousing and Materials Management					

School Responsible:	School of Transport Engineering Environment and Planning

Module Overview:

Warehousing and material management is an integral activity of logistics and supply chain management. The module introduces the student to the storage, protection, movement and distribution of material or goods in the four transport modes. The module covers material handing definitions, warehouse design and equipment choice, material handling principles, objectives, methods to reduce waste, cost and to increase efficiency. The module also covers lifting, rigging, calculation of warehouse space, consolidation and cross docking requirements, material weights and safe working loads, sling angle, centre of gravity and hydraulic forces for lifting equipment.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Comprehend proper material handling processes and objectives.
2	Describe the various material handling activities that take place in a warehouse / distribution centre, their environmental impact and sustainable warehouse measures.
3	Illustrate various methods of achieving 'Lean Warehousing' and elimination of waste material handling activities through the use of appropriate technology, techniques and equipment.
4	Translate / calculate total warehousing storage, cross docking requirements, consolidation space, material weights / unit loads, sling angle loads, mechanical advantage, frictional losses, centre of gravity and hydraulic forces for lifting equipment.
5	Comprehend from freights statistics, the freight areas within the Irish freight sectors (road, rail, marine and air) whereby extensive material handling activities occur.
6	Describe the principles of operation of various material handling equipment that is used in warehousing, road, rail, marine and air freight operations and its associated unit loads i.e. containers, pallets, rail wagons and air craft containers.

Indicative Syllabus:

10 Topics

1. Material Handling Principles and Objectives – definitions, associated terminology and objectives of proper material handling.
2. Warehousing / distribution centres layout and design, calculation of storage, cross docking and consolidation space.
3. Warehousing inventory classification, counting and control, picking, racking and storage choice and methods to reduce waste (lean warehousing).
4. Statistics of freight / material handling activities in Ireland – to include tonnage, tonnage / km, laden journeys and sustainable handling activities for each mode of transport.
5. Selection of warehouse material handling equipment for flow rate considerations, work in progress, fixed points and distance, small and large volumes.
6. Securing, lashing and rigging methods, sling angle load factor, calculation of weights, centre of gravity for symmetrical and asymmetrical loads, hydraulic lifting forces, mechanical advantage and the use of pulleys and their additional friction loads.
7. Road transport – Main freight activities, vehicle classification, road vehicle type selection - body type selection, auxiliary material handling equipment type/ selection, articulated/drawbar combinations and legal considerations including weights and dimensions (RSA), CVRT and driver licencing.
8. Rail Freight Material Handling – advantages of rail, types of freight moved in Ireland, equipment used and future opportunities.

9. Marine Freight Material Handling – Importance of marine operations for imports and exports, Port equipment used – RTG's, Ship to shore cranes, Straddle carriers, Reach stackers, spreaders and empty container handling.
10. Air Freight Material Handling – Advantages of air freight, air freight goods, air freight material handling equipment i.e. platform loaders, freight compartments in passenger aircraft, freight roller systems and layout of dedicated freight aircraft.

Learning and Teaching Methods:

This module will be delivered via the following format

- Lectures
- Case studies
- Group work
- Problem based learning

Total Teaching Contact Hours 1 two hour lecture per week 1 single hour lecture per week	36 hours
Total Self-Directed Learning Hours	64 hours

Module Delivery Duration:

This module will be delivered over one semester

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
In class assessment. Assessment 1 – Week 6 (20 open ended short answer questions Topics 1-5)	20%	LO 1-3
In class assessment. Assessment 2 – Week 12 (20 open ended short answer questions Topics 6-10)	20%	LO 4-6
Final written examination 2 Hours duration – Answer any 4 of 6 Questions	60%	LO 1-6
Overall pass mark 40%		

Module Specific Assessment Arrangements (if applicable)	
(a) Derogations from General Assessment Regulations	None
(b) Module Assessment Thresholds	None
(c) Special Repeat Assessment Arrangements	1 repeat continuous assessment offered: 20 open ended short answer questions LO 1-6 (40%) Supplemental Examination (60%) LO 1-6

Essential Reading:

- Frazell, H. Edward (2015), World Class Warehousing and Material Handling, 2nd Ed. New York, USA.
- Chartered Institute of Logistics and Transport, (2018). Warehouse Management. Hill Consulting, New York, USA.
- Keller, B. Scott., Keller, C. Brian., (2013), The Definitive Guide to Warehousing, New Jersey, USA.

Supplemental Reading:

- McKinnon et al, (2016), Green Logistics. Improving the Environmental Sustainability of Logistics, 3rd ED, Kogan Page, London

Web references, journals and other:

Journal:

- World Cargo Handling (Monthly Magazine)
- Commercial Motor (Weekly Magazine)
- Fleet Magazine (monthly)

Web:

- www.mhi.org
- www.mmh.com
- www.rsa.ie
- www.irha.ie
- www.ftai.ie

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Sustainable Transport Infrastructure					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

In this Sustainable Transport Infrastructure module students will consider how the development and retrofitting of physical transport systems should be done with due consideration for economic, social and environmental implications. This will include the road and street network, bus and rail networks, and access to air and marine ports. Transport represents almost a quarter of Europe's green house gas emissions and is the main cause of air pollution in cities.

This blended learning module introduces students to the concepts and considerations for sustainable transport infrastructure applying to urban and rural contexts. An overview will be given of the global considerations such as the UN Sustainable Development Goals and European and National Policies alongside the determinants of transport trips and modal choice in personal or commercial scenarios. Students will work through a series of exercises to consider how best to match the top down policies and procedures to the bottom up behaviours and needs.

The module gives students an appreciation of the role of policy making, behaviour science, transport network design and accessibility considerations within the greater global sustainability agenda.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Discuss the role of International and National policies in the advancement of Sustainable Transport Infrastructure
2	Discuss the role of Behaviour Science and Environmental Psychology in the context of trip determination and modal choice
3	Critically assess a neighbourhood to rate its sustainability from a transport perspective.
4	Critically assess an airport, port or rail service to rate its sustainability from a transport behaviour perspective.

Indicative Syllabus:

5 topics

1. Introduction to International, EU and National Sustainable Transport Policies and the UN Sustainable Development Goals.

2. Introduction to Behaviour Science and Environmental Psychology to gain an understanding of why people make the transport decisions they do and discuss how we can plan and design for more sustainable choices.

3. Overview of Land Planning, Road Networks and Rail Networks and how these influence the transport related carbon footprint of a region or neighbourhood.

4. Introduction to Street level Auditing tools for Walkability, Cyclability and Accessibility for those with additional needs and their role in creating or retrofitting for low-carbon neighbourhoods.

5. How the principles in topic 4 also apply to how we design our Ports, Airports and Rail Services.

Learning and Teaching Methods:

This module will be delivered via the following format

- Lectures & Guest Lectures
- Problem based learning
- Group discussion
- Site visits
- Case studies

Total Teaching Contact Hours 1 two-hour lecture per week for 6 weeks of semester 1 single-hour groupwork tutorial per week 2 three-hour site auditing fieldtrips	30
Total Self-Directed Learning Hours	70

Module Delivery Duration:

This module will be delivered for one semester,3 to 4 hours per week.

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Reflective e-portfolio documenting evidence of learning from the module lectures, fieldtrips and insights from debates and groupwork.	60	LO 1, 2, 3 & 4
Groupwork project assessed by poster and participation in class debate event	40	LO 1, 2 3 & 4
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	Students can repeat the module at the next available opportunity	

Essential Reading:

Sustainable transport, mobility management and travel plans, Marcus Enoch (2012)
Mobilities, John Urry (2007)
Pedestrian & transit- Oriented Design, Reid Ewing & Keith Bartholomew (2013)
Smarter Travel – A Sustainable Transport Future 2009-2020, DTTaS (new policy due 2020)
Design Manual for Urban Roads and Streets (2015)

Supplemental Reading:

Nudge, Thaler & Sunstein (2009)
The Power of Habit – Why we do what we do and how to change, Charles Duhigg (2013)
Mobility Justice – The politics of movement in an age of extremes, Mimi Sheller (2018)
Monsuur F, Enoch M P, Quddus M A and Meek S D (2017) The Impact of Train and Station Types on Perceived Rail Service Quality, Transportation Research Record, 2648, 51–59.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.
Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Supply Chain Management					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

Supply Chain Operations is now seen as critical in delivering sustainable business success by facilitating customer satisfaction at optimum cost. It does so through adding value throughout the supply network via activities such as product & service differentiation and as such, has been identified as key in driving competitive advantage. This module covers the major issues in supply chain management, including definition of a supply chain; role of inventory; third-party logistics providers, building resilient supply chains, performance management and analysis of cost to serve models.

Learning Outcomes (LO): (to be numbered)

For a 5 ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Describe the key activities in Supply Chain Management
2	Comprehend the fundamentals of Supply Chain Management Philosophies
3	Recall the importance of performance management in Supply Chain Operations
4	Comprehend the relevance of Supply Chain Resilience
5	Translate the main drivers relevant to Supply Chain efficiencies & Supply Chain responsiveness
6	Describe the cost to serve model and comprehend its role in modern Supply Chain Management

Indicative Syllabus:

Lectures will include the following subject areas:

1. Definition of Supply Chain Management
2. Understanding of Supply Chain Network Design & Resilience
3. Align supply chain integration strategy with the uncertain conditions of supply and demand.
4. Current trends in Supply Chain Operations
5. Principles involved in performance management
6. Demonstrate and employ important workplace skills such as teamwork, meeting deadlines, problem solving and communications
7. Analysis of cost implications to overall supply chain efficiencies, leading to basic understanding of the cost to serve model

Learning and Teaching Methods:

Lectures
Class discussion
Group Working
Case Studies
Guest Lectures

Total Teaching Contact Hours	36

Total Self-Directed Learning Hours	64

Module Delivery Duration:
This module will be delivered over one semester: Year 2 / Semester 1

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Individual Assignment / in class assessment / MC Quiz #1	30%	1-3
Individual Assignment / in class assessment / MC Quiz #2	30%	4-6
Group project / poster presentation #3	40%	1-6
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	Students who are referred in this module will be required to submit 1 written assignment on a given topic LO 1 – 6 (100%)	

Essential Reading:

Martin Christopher 2016 Logistics & Supply Chain Management (5th Edition) Pearson Education Ltd

Edward Sweeney 2009; Supply Chain Management and Logistics in a Volatile Global Environment. Blackhall Publishing

Edward Sweeney 2007; Perspectives on Supply Chain Management and Logistics (Creating Competitive Organisations in the 21st Century) Blackhall Publishing

Supplemental Reading:

Colin Scott; Henriette Lundgren; Paul Thompson 2011; Guide to Supply Chain Management. Springer Heidelberg.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Telematics and the Smart City					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This Blended learning module introduces students to the concepts and considerations for Intelligent Transport Systems (ITS), Information Communications Technology (ICT), the Internet of Things (IoT), telematics and Smart Cities. Smart Cities is the term given to urban areas that use different types of electronic data collection sensors to supply information that is then used to manage systems and assets such as transport and other resources efficiently. Examples include traffic light sequences, real time passenger information, GPS navigation and toll collection.

This topic is new and fast evolving. A series of guest lectures and case studies will present up-to-date information to the students to inform their independent study. In particular, ethical considerations relating to GDPR and Big Data.

The use of telematics in a transport business is vital for lean and efficient operation. This module will also introduce students to fleet management software as used in the transport industry.

The module gives students an appreciation of the benefits and limitations of telematics and smart city applications in the transport industry to empower them to identify the potential of and critique the suitability of technology for real word transportation applications.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Discuss the role of telematics, ITS, ICT and IoT in the advancement of Transport systems in the 21st Century.
2	Critically appraise examples of ITS applications through case study reviews
3	Discuss the ethical considerations for telematics and smart cities with particular consideration for the collection and use of personal data.
4	Create an e-portfolio that documents learning on topics covered throughout the module
5	Understand fleet tracking systems their components and how they work.
6	Demonstrate proficiency in the use of telematic software to plan maintenance schedules. analyse data track vehicles.
7	Combine and analyse data from telematic systems to optimise their output in order to make informed business decisions.
8	Appraise fleet management telematic packages.

Indicative Syllabus:

6 topics

1. Connected Vehicle technology is technology that enables cars, buses, trucks, trains, roads and other infrastructure, and our smartphones and other devices to “talk” to one another. Connected vehicles have the potential to dramatically reduce the number of fatalities and serious injuries caused by accidents on our roads and motorways by preventing crashes from happening in the first place.

2. Autonomous Vehicles (AV) have moved from the realm of science fiction into a reality in recent years. This topic will cover the advancements in AV developments and the key considerations for their roll-out.

3. Standards, Data Protection, Ethics and the Law. Regulation is vital with new technologies, but not to the determinant of progress. These topics will be discussed, reviewed and debated.

4. Big Data. This topic introduces how the availability of Big Data, coupled with new data analytics, has resulted in a move from data-driven predictive approaches for applications such as transport models to knowledge-driven real time models.

5. Smart Cities, ICT and IoT applications. Cities are becoming smarter and city management systems are becoming more inclusive and efficient thanks to the use of ICT and IoT applications. A Smart City is an urban area that uses different types of electronic methods and sensors to collect data. Insights gained from that data are used to manage assets, resources and services efficiently; in return, that data is used to improve the operations across the city.

6. Telematic Topics.
- Components of fleet tracking.
- Reviewing data.
- Engine maintenance.
- Risk management.
- Speed profiling.
- Managing resources

Learning and Teaching Methods:

This module will be delivered via the following format
- Lectures & Guest Lectures
- Problem based learning
- Group discussion
- Site visits
- Case studies
- Practical demonstrations
- Computer-based learning

Total Teaching Contact Hours 1 two-hour lecture per week for 12 weeks of semester 1 two-hour groupwork tutorial per week	48
Total Self-Directed Learning Hours	52

Module Delivery Duration:

This module will be delivered for one semester, 3-4 hours per week.

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Reflective e-portfolio documenting evidence of learning from the module lectures and insights from debates and groupwork.	30	LO 1, 2, 3 ,4, 5 & 6
Groupwork project assessed by poster and participation in class debate event	20	LO 1, 2, 3, 4, 5 &6
Telematics groupwork project assessed by poster	25	LO 5
Telematics assessment / multiple choice questions	25	LO 6, 7 & 8

Module Specific Assessment Arrangements (if applicable)	
(a) Derogations from General Assessment Regulations	None
(b) Module Assessment Thresholds	None
(c) Special Repeat Assessment Arrangements	Students can repeat the module at the next available opportunity

Essential Reading:

Cambridge Journal of Regions, Economy and Society, Volume 8, Issue 1, Special Issue on Smart Cities March 2015
Can cities become smart without being sustainable? A systematic review of the literature (2019) Yigitcanlar et al. *Sustainable Cities and Society* Volume 45 pp. 348-365

Big Data, new epistemologies and paradigm shifts. (2014) Rob Kitchin Big Data & Society April–June 2014: pp.1–12

Steffen Schorpp, 2011, "Fleet Telematics Real-time management and planning of commercial vehicle operations". Gabler Verlag,Germany.

Supplemental Reading:

Smart Cities: Big Data, Civic Hackers and the Quest for a new Utopia, Townsend, 2014
The Responsive City: Engaging Communities Through Data-Smart Governance, Goldsmith & Crawford
The City of Tomorrow: Sensors, Networks, Hackers, and the Future of Urban Life (The Future Series), Ratti
Demystifying Smart Cities. Practical Perspectives on How Cities Can Leverage the Potential of New Technologies Anders Lisdorf

Web references, journals and other:

https://www.telematics.com/a-comprehensive-guide-to-fleet-tracking-systems

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	**Transport, Society and Climate Change**					

This Header should be repeated on each page of the Module

School Responsible:	Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:
This module will focus on transport, society and climate change.
It will introduce the learner to the concept of sustainable development, sustainable transport and planning, cities and sustainable development using international case examples of planning and delivering transport systems.
It will also evaluate the technology roadmap applicable to transport systems, whilst focusing on the implications and consequences of climate change in order to produce greener and more sustainable energy. The carbon footprint of a working vehicle will also be analysed.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Demonstrate the concept of sustainable development.
2	Apply the theory of sustainable transport with regard to international case examples.
3	Develop the Technology roadmap, the destructive nature of emissions and technical transition from combustion to conversion.
4	Show the implications and consequences of climate change, producing greener and more sustainable energy and negative emissions technology.
5	Develop by calculation the carbon footprint of a working vehicle.

Indicative Syllabus:

Topics:

- Introduction and context to sustainable development
- Sustainable planning and transport
- Cities and sustainable development
- International cases of planning and delivering transport systems
- Fuels, combustion, emissions and pollutant.
- Energy road map, alternative fuels and sustainable energy sources
- Euro Regulations from I to VII and related technology designed to reduce tailpipe emissions.
- Climate change, the Greenhouse Effect, Global Warming and the expectations of Society for a seamless transition to a sustainable Green Economy.
- Environmental damage and the cost as a result of not achieving set Climate Change goals
- Carbon Footprint calculation for a Road Transport Vehicle
- Potential for Negative Emission Technologies and other advances designed to reduce the level of pollutants in the Atmosphere as we head towards 2050.
- Producing energy in a Green manner such as Solar, Wind, Hydro etc.

Learning and Teaching Methods:	
The module will comprise lectures, class discussion and guest lectures where applicable	
Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	52

Module Delivery Duration:
The module will be delivered for four hours per week over the semester.

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Formal End of Module Examination	60%	1-5
Continuous Assessment	40%	1-5
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements		

Essential Reading:

Learners will be provided with bespoke class notes.

1. United Nations, 2020. Sustainable Development Goals. Available at: https://www.un.org/en/development/desa/population/theme/sdg/index.asp.
2. Alternative Fuels and Advanced Technologies for Improved Environmental Performance; (2014). R. Folkson. WoodHead Publishers
3. James D Halderman, (2015) Hybrid and Alternative Fuel Vehicles. 4th Edition Pearson Education (US) Publishers.
4. Tom Denton, (2016) Electric and Hybrid Vehicles, Institute of the Motor Industry
5. Nunney, M. J. (2007) Light and Heavy Vehicle Technology, 3rd Edition, Butterworth-Heinemann, Oxford.

Supplemental Reading: (author, date, title, publisher)

1. Bosch, Robert, (2011), Bosch Automotive Handbook, 8th Edition, Robert Bosch GmbH.
2. Khair, M, Millo, F. (2008), Diesel Exhaust After Treatment 200-2007, SAE Publications USA.

Web References:
Google Scholar
epa.ie
www.autoshop101.com
www.auto-solve.co.uk
www.smogsite.com

Journals;
Automotive Engineering International, SAE International
Transport Engineers, Institute of Road Transport Engineers.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

YEAR 3

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			10	8
Module Title	Advanced Transport Planning					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module is focused on the pertinent issues related to the operation of a road transport business. Students will be exposed to the various factors that affect the daily operation of a vehicle or fleet of vehicles and will be encouraged to explore management techniques and practices to mitigate potential issues, inefficiencies and/or environmental effects. Following the completion of the module students will be well versed in the various statutory requirements that a company must abide by in order to be compliant and not subject to possible penalties.

Upon finishing the module, students will be well positioned to manage transport operations in a sustainable manner.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Determine the marketplace in which logistics service providers (LSP) are immersed.
2	Assess the value of utilisation management for fleet operators.
3	Predict the actions of LSPs to limit and control environmental effects.
4	Value the role of revenue management to LSP's.
5	Evaluate the significance of logistics planning as an enabler of competitive advantage.
6	Summarise management techniques and practices to ensure high and sustainable productivity levels in relation to logistics operations.

Indicative Syllabus:

7 Topics

1. Logistics market structure: LSPs, value added services, value proposition, commodity markets and trends, logistics scenario planning.
2. Synchronising Supply and Demand: Logistics service as a derived demand, factors determining demand, matching service provision and demand levels and requirements.
3. Logistics planning: capacity management, forecasting, demand management, route planning, distribution channels, reverse logistics, logistics information systems.
4. Asset utilisation; factors affecting utilising, efficiency inducing practices, benefits of increased efficiency.
5. Managing logistics operating costs; whole life cycle costing, depreciation, cost drivers and categorisation, asset replacement policy, purchase options, financing, fleet maintenance (policies and SOP, preventative, scheduled, predictable).
6. Revenue management and protection; Tendering and outsourcing techniques, quality management in service provision, rate setting
7. Logistics operations and the environment; Sustainability drivers and regulatory frameworks, environmental affect mitigation techniques, efficiency drivers, synergies in operations, innovation (technological/managerial), circular economy.

Learning and Teaching Methods:

This module will be delivered via the following format

1. Class lectures 2. Class discussion 3. Site visits 4. Case studies 5. Problem based learning 6. Guest lectures 7. Tutorials

Total Teaching Contact Hours 1 two-hour lecture per week 1-hour tutorial per week	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:
This module is delivered for one semester

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Continuous Assessment 1 - Response to tender (group), written report and presentation – Week 11 Tender request to include (but not limited to) vehicle specifications, procurement procedures, costs (capital and operational), customer service provisions, methodology, environmental considerations and ethical treatment of staff. .	50% (30% - written report; 20% presentation)	LO 1-6
End of semester written examination - 2 Hours duration – Answer any 4 of 6 Questions	50%	LO 1-6
Overall pass mark 40%		
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	NONE	
(b) Module Assessment Thresholds	NONE	
(c) Special Repeat Assessment Arrangements	1 repeat continuous assessment offered: 2000-word essay LO 1-6 (50%) Supplemental Examination (50%) LO 1-6	

Essential Reading:

Rushton, A., Croucher, P. and Baker, P. (2017). *The handbook of logistics and distribution management: Understanding the supply chain, 6th Edition*. London: Kogan Page.

Supplemental Reading: (author, date, title, publisher)

Agrawel, S., Singh, R. and Murtaza, Q. (2015). *A literature review and perspectives in reverse logistics.* Resources, Conservation and Recycling, Vol. 97, pp.76-92.

Alkhatib, S., Darlington, R. and Nguyen, T. (2015). *Logistics Service Providers (LSPs) evaluation and selection: Literature review and framework development.* Strategic Outsourcing: An International Journal, Vol. 8 Issue 1, pp.102-134.

Mangiaracina, R., Song, G. and Perego, A. (2015*). Distribution network design: a literature review and a research agenda*. International Journal of Physical Distribution & Logistics Management, Vol. 45 Issue: 5, pp.506-531.

McKinnon, A. (2018*). Decarbonising logistics: Distributing goods in a low carbon world*. London: Kogan Page

Pacheco, E., Kubota, F. Yamakawa, E., Paladini, E., Campos, L. and Cauchick-Miguel, P. (2018). *Reverse logistics: Improvements and benefits when shifting parts exchanging process in a household appliance organization.* Benchmarking: An International Journal, Vol. 25 Issue 5, pp.1447-1460.

Richards, G. and Grinsted, S. (2020). *The logistics and supply chain toolkit; over 100 tools for transport, warehousing and inventory management, 3rd Edition*. London: Kogan Page.

Roy, S. and Sengupta, T. (2018). *Quintessence of third party (3PL) logistics*. Journal of Global Operations and Strategic Sourcing, Vol. 11 Issue: 2, pp.146-173.

Sanchis-Pedregosa, C., Machuca, J. and González-Zamora, M. (2018). *Determinants of success in transport services outsourcing: empirical study in Europe.* The International Journal of Logistics Management, Vol. 29 Issue: 1, pp.261-283.

Sudipendra N., Sengupta, T. (2018). *Quintessence of third party (3PL) logistics*. Journal of Global Operations and Strategic Sourcing, Vol. 11 Issue 2, pp.146-173.

Swanson, D. (2016). *Transportation price benchmarking: implications for firm performance*. Benchmarking: An International Journal. Vol. 23 Issue: 4, pp.1015-1026.

Watson, G., Worm, S., Palmatier, R. and Ganesan, S. (2015). *The Evolution of Marketing Channels: Trends and Research Directions*. Journal of Retailing, Vol 91 No 4, pp. 546 – 568.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None		TDG3000	5	8
Module Title	**Transport of Dangerous Goods**					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module provides an opportunity to examine the fundamentals of transporting dangerous goods. Students will be exposed to legislation, practices and operations pertaining to the safe and compliant carriage of hazardous consignments. It will give the students an opportunity to understand the legal obligations of all stakeholders (consignor, consignee, carrier etc.) involved in the transport of cargo which is deemed to be dangerous for the purpose of transport. The module will also demonstrate the ramifications of non-compliance to the legal requirements involved in the transport of dangerous goods.

The module will utilise road transport regulations as the primary medium to demonstrate the regulatory framework and operational expectations and procedures and to showcase the level of commonality across transport modes.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Illustrate the legal requirements of each party in the transport chain with regard to the transport of dangerous goods.
2	Apply the classification system for dangerous goods.
3	Illustrate the expectations with regard to the treatment of goods when being transported as hazardous cargo.
4	Distinguish the regulatory safeguards and commitments for transport units, drivers/pilots and the wider public whilst transporting dangerous cargo.
5	Utilise data and information to decipher the appropriate response during case study analysis.
6	Communicate in an effective, efficient and persuasive manner with regards to legislative compliance and the protection of personnel and general public.

Indicative Syllabus:

9 Topics

1. General provisions; definitions, exemptions, security and transitional measures.
2. Classification of dangerous goods; UN numbers, classification labels, hazard identification numbers, generic entries and packing groups.
3. Dangerous Goods List; Table A and B of ADR.
4. Packaging and tank provisions; packing requirements for the cargo holding vessel, tank codes, filling ratios and mixed packing restrictions.
5. Consignment procedures; accompanying documentation requirements, marking and labelling of packages, marking and placarding of vehicles, trailers and tankers.
6. Construction and testing of packaging IBC’s and tanks; design, construction, inspection and testing of carrying devices.

7. Provisions concerning the conditions of carriage, loading and unloading; requirements related to the treatment of cargo during carriage, loading and unloading operations.

8. Mode specific divergence; Part 8 & 9 (ADR), Stowage and Segregation (IMDG), Provisions concerning loading, unloading and handling (RID) and Section 9 – Handling (DGR).

Learning and Teaching Methods:

This module will be delivered via the following format

1. Lectures
2. Tutorials
3. Case studies
4. Problem based learning
5. Group discussion
6. Guest lectures

Total Teaching Contact Hours 1 two-hour lecture per week 1 two-hour tutorial per week	48
Total Self-Directed Learning Hours	52

Module Delivery Duration:

Module to be delivered over one semester

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
In class assessment. Assessment 1 – Week 3 (20 open ended short answer questions Topic 1-3)	25%	LO 1 & 2
In class assessment. Assessment 2 – Week 5 (20 open ended short answer questions Topics 4-6)	25%	LO 3
In class assessment. Assessment 3 – Week 10 (20 open ended short answer questions Topics 7 & 8)	25%	LO 4
In class assessment. Assessment 4 – Week 12 (Case study analysis; Topics 1-8)	25%	LO 1-5
Overall pass mark 40%		

Module Specific Assessment Arrangements (if applicable)	
(a) Derogations from General Assessment Regulations	None
(b) Module Assessment Thresholds	None
(c) Special Repeat Assessment Arrangements	Repeat assessments available for Assessments 1 – 4 in line with original expectations.

Essential Reading:

IATA. (2019). *Dangerous Goods Regulations, Edition 61*. Montreal: IATA.

International Maritime Organisation. (2018). *International Maritime Dangerous Goods Code. 2018 Edition.* London: IMO.

OTIF. (2019). *Regulation Concerning the International Carriage of Dangerous Goods by Rail (RID).* Norwich: OTIF.

UN. (2018). *European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR), 2019*. Geneva: UN.

Supplemental Reading:
HSA. (2015). *Guidance on the duties of a Dangerous Goods Safety Advisor.* Dublin: HSA.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			5	8
Module Title	Research Ethics & Techniques					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module uses a process-focused approach to support students produce academic quality research outputs.

The aim of the module is to give students the opportunity to become more confident and discerning users of information and to equip them with the necessary skills to locate, evaluate and use information effectively to the benefit of their academic studies; and to become critical thinkers, ethical creators and users of information. The skills learned by undertaking this module replicate those required to produce academic quality research outputs.

This module will explore the skills required for the collection and analysis of information using various research methodologies.
It will investigate the main methods of primary data collection and analyse their usefulness in a modern transportation setting.
The background to the challenges of completing a dissertation will be explored.
The module will include the skills needed for a successful presentation of a full dissertation proposal.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Identify relevant topics for a research dissertation and undertake a keyword search
2	Review published literature on a selected topic
3	Formulate a research question
4	Select and plan appropriate techniques to a research problem
5	Reflect on performance and activities for the purpose of self-assessment and create an e-portfolio that documents learning on topics covered throughout the module
6	Design, plan and develop a dissertation proposal
7	Undertake a self-assessment on project management skills for independent research and create a project management plan

Indicative Syllabus:

The method of instruction is designed to support the student and ensure they will be in a position to select a research topic, search for and evaluate literature, choose a research paradigm and plan a research project to include an application for ethical permission.

In the module the principles of academic writing and information literacy will be examined and a focus placed on how to write and present a research output.

Students will be introduced to the practical application of digital literacy which will enable them to identify, locate, evaluate and choose between information resources in a variety of media (including library catalogues, electronic and print journals and subject databases). Conducting ethical research using appropriate tools; be able to evaluate appropriate sources for research papers, including online sources; understanding plagiarism and how to avoid it; Use referencing formats correctly.

Key elements of academic writing; understanding the writing process; role of critical thinking in academic writing; developing an academic/practice-based writing style as appropriate; critiquing one's own/colleague's

work; critiquing and writing key components of a research paper; research findings from the field of academic literacies.

Learning and Teaching Methods:

In the delivery of the module a range of teaching and learning methods, along with a range of relevant learning technologies will be used:
Workshops will introduce the key topics of the module and these will be supported by structured class discussions.
Seminars, such as Journal Club, where participants will present their work in progress to the group for formative feedback.
Face-to-face and online Class Discussion: Class discussion will be driven and supported by appropriate academic literature and will allow for ideas and issues to be clarified. These discussions will enable students to draw on their own knowledge of the writing and research process and they will be encouraged to evaluate different conferences and journals in the field of transport operations management. A dedicated Brightspace site will support the module and both asynchronous and synchronous discussions will complement class dialogue.
Independent Study: Participants will be responsible for engaging in independent reading and research in order to consolidate and expand on the material covered in lectures and workshops.

Total Teaching Contact Hours 1 two-hour lecture per week for 12 weeks of semester	24
Total Self-Directed Learning Hours	76

Module Delivery Duration:

This module will be delivered for one semester, 2 hours per week.

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Reflective e-portfolio documenting evidence of learning from the module lectures and insights from debates and groupwork.	60	LO 1 - 7
Individual assessments and participation in class journal club and discussion events	40	LO 1, 2, 3, 4, 6 & 7
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	Students can repeat the module at the next available opportunity	

Essential Reading:

Note: TU Dublin library provides access to a wide range of books and literature on academic writing and information literacy, there is no single literature source selected as essential reading. However, the module will require the participants to conduct literature reviews and source relevant and pertinent material. The following books are provided here only to indicate the level and type of books that the participants will be expected to read.

Patten, Mildred L.(2017) *Understanding research methods: an overview of the essentials* London : Routledge

Pajo, B. (2017) *Introduction to research methods : a hands-on approach* Los Angeles : Sage

Rumsey, S. (2008). *How to find information: a guide for researcher*. Maidenhead: Open University Press.

Web references, journals and other:

Academic Phrasebank www.phrasebank.manchester.ac.uk (useful for extending academic vocabulary and modelling academic writing)
Internet Grammar of English www.ucl.ac.uk/internet-grammar
Dartmouth College Writing Materials
http://www.dartmouth.edu/~writing/materials/student/ac_paper/what.shtml

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Financial Management 2					

School Responsible:	School of Transport Engineering Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module builds on the knowledge of terminology used in financial accounting and learned in Year 2 and explores how the financial information provided by the accounting system can be used and applied as practical management controls and financial tools that can be used by all businesses, particularly small and medium sized enterprises (SME's).

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Apply key understanding of accounting and financial information in day to day business planning and control.
2	Apply "Management by Exception" principle in cost control.
3	Show the nature of costs and how they are incurred and avoided.
4	Plan for cash flows allowing for known cash flow trends identified by the accounting system. To apply pricing techniques to pricing products and to use credit control techniques to secure prompt payment by customers.
5	Apply the use of documentation flows and other dispute avoidance methods in managing debtors and securing payment.
6	Show the importance of time recovery in service based businesses such as workshops and hangars (due regard to differing mixes of materials and labour where services are performed to customer order).
7	Develop financial ratios to evaluate business decisions (Gross Margin to Business Purchase Decision; Price Earnings to company valuations and proposals to acquire).

Indicative Syllabus:

- Cost classifications: Direct Costs and Indirect Costs in Financial Accounting; Fixed Costs and Variable Costs in Management Accounting.
- Cost Volume Profit Analysis / Breakeven Analysis and impact of variations in key assumptions underlying the analysis (viz changes in sales and costs assumptions).
- Budgetary control – importance of the sales budget in driving all the other budgets. The Marketing Mix. Providing for movements in stock levels. Limitations and objectives of budgetary control.
- Cash Flow Forecasting – importance in obtaining loan finance. Making allowances for trends identified from the accounting system such as profit margins, cash flows from customers and to suppliers having due regard to agreed credit terms.
- Credit Control and the management of Debtors – procedures to secure prompt and timely payment from credit customers. Customer evaluation techniques and methods of monitoring compliance with credit terms.
- Distinguishing Job Costing from Process Costing with emphasis on recovery of indirect overheads on Jobs using predetermined rates.
- Measuring Workshop Efficiency in a multi departmental / dealership operation and how General Overheads are apportioned to user departments.
- Review of Gross Margins in key industrial sectors. Action to be taken if not achieved. Use of knowledge of Gross Margin in a Business Purchase decision.

- Capital Gearing and the use of debt in Capital Structure. Introduction to Price / Earning ratio and its use of in valuing a business.

Learning and Teaching Methods:	
By class contact. Presentations are made using Power Point and similar presentation methods. Active preparation of solutions to questions on the wipe board in class. It is expected that the students will prepare solutions to some questions in advance of class. Lectures supplemented with tailored question packs for which all solutions will be actively worked through.	
Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	76

Module Delivery Duration:
2 Semesters (throughout the academic year)

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Examination	75%	1,2,3,4,5,6,7
Assignment	25%	3,4
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	n/a	
(b) Module Assessment Thresholds	n/a	
(c) Special Repeat Assessment Arrangements	n/a	

Essential Reading:
"Accounting & Finance For Non Specialists", Atrill and McLaney (Prentice Hall)
"Cost Accounting, A Managerial Emphasis", Horngren and Foster (Prentice Hall)
Supplemental Reading:
"Fundamentals of Cost and Management Accounting", Kearns (Longman)

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Talent Development					

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:
The module incorporates the formatting of a CV, a transport logistical related job interview and preparation processes. This module will also explore a talent development strategy which would consider current and future needs within the transport & logistic industry. The module introduces the learner to the importance and functions of personnel/human resource management (HRM) and will interpret pathways and programs required for talent growth. It will also evaluate the HR processes and actions to promote and sustain talent development.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Compose a CV and cover letter and participate in structured interviews
2	Develop a strategy for a job application and interview (preparation)
3	Examine HRM Structures, organizational goals and priorities within the transport logistics sector
4	Analyse performance management and how it should align with business strategy

Indicative Syllabus:
1. Job application/ Structure interviews and recruitment techniques 2. Career development and succession planning 3. Aligning organization's business strategy with its workforce - talent development -team development 4. Differentiate the various talent acquisition and retention processes 5. Examine Human Resource Structures, career development, coaching, work life balance, working within teams, staff retention and sustainability 6. Investigate the various incentives that are closely aligned to a business's objectives – compensation 7. Analyse companies reward management processes, develop goals for success and supports for future development 8. Compare performance management, appraisal, remuneration and their relationship to motivation theory 9. Distinguish organizational goals & priorities within the transport and logistics sector

Learning and Teaching Methods:	
Lectures class notes, case studies, problem-based learning group projects	
Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	52

Module Delivery Duration:
Delivered over one semester for three contact hours per week.

Continual assessment 100%
Learners must achieve an aggregate of 40% across all elements of the assessment.

Assessment Type	Weighting (%)	LO Assessment (No.)
CV and Interview	40%	1- 2
Assignment – presentation or MCQ	60%	3 - 4
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements		

Essential Reading: (author, date, title, publisher)

Author: (Caplan J 2013) Strategic Talent Development: Develop and Engage All Your People for Business Success

Authors: (MacNamara A, Collins D 2017) Talent Development: A Practitioner Guide

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
WPL3000					5	8
Module Title	Work Placement					
School Responsible:	School of Transport Engineering, Environment and Planning					

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:
The work placement involves working in the transport industry for the entirety of semester two. The student will be monitored by a supervisor from the lecturing staff and a mentor from the workplace. The placement will entail carrying out the normal duties as detailed by the employer, reflecting on the placement through an online logbook, a final presentation and report of the work experience.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Analyse and apply theory into practice from a range of programme modules.
2	Relate the significance of the placement in developing the technical and practical skills which contribute to key graduate attributes desired in the transport industry.
3	Outline and analyse the challenges and problems which arose within the work placement and detail how these problems and challenges were resolved.
4	Analyse and apply theory into practice from a range of programme modules.
5	Reflect on the significance of the placement in developing the technical and practical skills which contribute to key graduate attributes desired in the transport industry.

Indicative Syllabus:
The placement will consist of working in a transport industry and carrying out the duties assigned over the period of the placement. The student will record, reflect and share all work in an online log book, draft a report on the work placement and make a presentation to fellow students, lecture staff and representatives from the work placement organisations.

Learning and Teaching Methods:	
Learning will take place in the context of the work environment where the student will be under the supervision of an industry mentor; The student will learn by observation and doing the allocated tasks; Peer learning is to be achieved through a final presentation. Community based learning (CBL) would be available to a small number of students who would work within a transport organisation in a developing country to assist with the enhancement of transport operations.	
Total Teaching Contact Hours	7.5
Total Self-Directed Learning Hours	525

Module Delivery Duration:

Assessment

Assessment Type	Weighting (%)	LO Assessment (No.)
Demonstration of initiative in applying for and securing a relevant placement in the transport sector.	25%	1 - 2
Report from the industry mentor	30%	1 - 5
Report from the academic supervisor	10%	1 - 5
Reflective logbook (online)	15%	1 - 5
Final presentation and report of work experience (1,500-2,000 words)	20%	1 - 5
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	Nil	
(b) Module Assessment Thresholds	Nil	
(c) Special Repeat Assessment Arrangements	Module to be repeated over the summer months if possible.	

Essential Reading: (author, date, title, publisher)

Work Experience, Placements and Internships, Rook S (2015)
Relevant company procedures, Bassot, B. (2013).
The reflective journal: Capturing your learning for personal and professional development. Douglas, A., & O'Neill, S. (2010). The Essential Work Experience Handbook. Gill & Macmillan.

Version No:		Amended By	
Commencement Date		Associated Programme Codes	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

YEAR 4

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
	None	None			10	8
Module Title	**Strategic Management**					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module demonstrates the importance of strategy to the success of a company in the transport sector. The module will demonstrate the techniques and mechanisms employed by company management to decide upon and embark upon a chosen strategy. The adopted strategy decides the position the company takes in the market place, which in turn can lead to competitive advantage. Students will be given the opportunity to utilise commonly used matrices to validate strategy investment.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Evaluate the role and significance of a robust strategy in the modern firm.
2	Assess the significance of the triple bottom line in strategy selection and implementation.
3	Utilise measurement tools such as IFE and SWOT to construct an internal evaluation matrix.
4	Evaluate the external market in which transport companies operate using EFE, PESTEL and Porters 5 forces model.
5	Appraise strategy options that are available for a globally orientated firm.
6	Design a strategy for an Irish transport company which trades internationally.

Indicative Syllabus:

7 Topics

1. Role of strategy in the success of a company – case studies of successful and unsuccessful strategies adopted by companies, mission statement, strategic fit, consistency with resources and capabilities, TBL, ethics and strategy.

2. The analysis of competition in an industry- Porters five forces competition model, competition from substitutes, threat of entry, rivalry between competitors, bargaining power of suppliers and buyers.

3. Intra-industry analysis – segmentation of an industry, identifying key segmentation variables, segmentation matrix, segment attractiveness, broad versus narrow, competitor analysis.

4. Analysing company resources and capabilities – role of resources and capabilities in formulation strategy, resources of a company - tangible, intangible, human, organisational capabilities, appraising capabilities.

5. Nature of Competitive Advantage – types of competitive advantage, cost leadership, differentiation, broad or narrow.

6. Competitive advantage and industry evolution – stages of industry life cycle, demand, growth, creation and diffusion of knowledge, industry structure, competition and success factors over the life cycle, BCG matrix.

7. Strategy identification, implementation and evaluation – intensive strategies, defensive strategies, diversification strategies, Vertical integration, Grand Strategy matrix, SPACE matrix, IE matrix.

Learning and Teaching Methods:	
This module will be delivered via the following format 1. Lectures 2. Case studies 3. Guest lectures 4. Group work 5. Problem based learning	
Total Teaching Contact Hours 1 two hour lecture per week 1 single hour lecture per week	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:
The module will be delivered over one semester for three hours per week.

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Continuous Assessment 1 – Presentation (group) – Week 10. (Presentation focusing on assessing the current position of a transport related business and developing a strategy that allows for growth and continuity). Topics 1-7	50%	LO 1-6
Final written examination 2 Hours duration – Answer any 4 of 6 Questions	50%	LO 1-6
Overall pass mark 40%		
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	Continuous assessment 1 – repeat essay offered (2000 words) LO 1-6 (50%) Supplemental Examination (50%) LO 1-6	

Essential Reading: (author, date, title, publisher)

David, F and David, F. (2017). *Strategic management: A competitive advantage approach, concepts and cases, 16th Edition*. New York: Pearson.

Supplemental Reading: (author, date, title, publisher)

Centobellli, P., Cerchione, R., Esposito, E. and Shashi. (2020). *Evaluating environmental sustainability strategies in freight transport and logistics industry*. Business Strategy and the Environment, pp.1-12.
Fuertes, G., Alfaro, M., Vargas, M., Gutierrez, S., Ternero, R., & Sabattin, J. (2020). *Conceptual framework for the strategic management: A literature Review—Descriptive. Journal of Engineering,* Vol. 2020, pp. 1-21.
Henry, A. (2018). *Understanding strategic management*. 3rd Edition. USA: Oxford University Press.
Hyvari, L. (2016). *Roles of top management and organizational project management in the effective company strategy implementation*. Procedia - Social and Behavioural Sciences. Vol. 226, pp. 108–115.
Kools, M. and George, B. (2020). Debate: *The learning organization—a key construct linking strategic planning and strategic management*. Public Money & Management, Vol 40 No. 4, pp. 262-264
Laurett, R. and Ferreira, J. (2018). *Strategy in non-profit organisations: A systematic literature review and agenda for future research*. Voluntas, Vol 29, pp.881-897.
Lim, S. and Sonko, L. (2019). *Linking corporate sustainability and innovation in supply chain management – evidence of a Taiwan leading glass recycling company*. Technology Analysis & Strategic Management, Vol 31 No. 8, pp. 957-971.

Lynch, R. (2018). *Strategic Management.* 8th Ed. London: Pearson.
Magretta, J. (2011). *Understanding Michael Porter: The essential guide to competition and strategy*. Boston: Harvard business press.
Moon, H. (2018). *The Art of Strategy: Sun Tzu, Michael Porter, and Beyond*. UK: Cambridge University Press.
O'Sullivan, S. (2019). *Supply Chain Disruptions: Aligning Business Strategy and Supply Chain Tactics*. London: Kogan Page

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					10	8
Module Title	E-Mobility and Advanced Vehicle Technologies					

School Responsible:	Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module provides the learners with a comprehensive understanding of the driving factors, challenges and technological progress made to date regarding automotive Electro-Mobility (E-Mobility), Advanced Driver Assistance and Vehicle Stability Systems. These technologies ultimately are the enablers for safe, secure and efficient road transportation operations involving commercial and passenger vehicles.
Positioned towards the end of the programme this advanced module significantly enhances the technology strand and equips the student with a solid foundation for further research, study and/or an exciting career in automotive, transportation and logistics industries.

Learning Outcomes (LO):

On Completion of this module, the learner will be able to

1	Evaluate the fundamental factors influencing the demand for Electro-Mobility (E-Mobility) solutions and Advanced Driver Assistance Systems (ADAS).
2	Analyse the interactive relationship between the four segments of the e-mobility ecosystem.
3	Justify the incremental technological progress towards vehicle electrification
4	Explain the functionality and benefits derived from automotive advanced driver assistance systems
5	Identify the inherent challenges associated with autonomous vehicle technological progress to date
6	Appraise the relevant electronic braking and suspension systems required for an RSA approved appropriate vehicle or trailer (46 tonne GCW).
7	Explain the principles of operation of commercial vehicle and trailer electronic braking systems that assist in vehicle safety and stability with consideration for operational advantages.
8	Summarise the operational advantages of utilising ECAS in commercial vehicles / trailers and passenger vehicles.
9	Determine the operational and competitive advantages of utilising commercial vehicle electronically controlled transmission and steering systems.
10	Summarise the principles of operation of modern commercial vehicle fuel and emission control systems relevant to Euro VI standards.

Indicative Syllabus:

- Fundamental influencing factors: Personal safety, time efficiency and productivity, energy efficiency and sustainable transport and environmental protection.
- E-Mobility Ecosystem: Electric vehicles, infrastructure, E-Mobility providers and regulations.
- E-Mobility Solutions: Micro-hybrid, Plug-in hybrid, Hybrid Electric Vehicles (HEV), Fuel Cell Electric Vehicle (FCEV), Battery Electric Vehicle (BEV).
- Battery technology developments
- ADAS: Adaptive cruise control, Adaptive lighting, Blind spot and pedestrian detection, Driver fatigue alert, Lane departure warning/avoidance, Autonomous emergency braking, Intelligent speed assistance, Traffic sign recognition, Cross traffic alert, Automatic parking, Collision avoidance, Night vision and matrix headlights.
- Technologies: LIDAR, multi-mode radar, ultrasonic sensors, infrared camera, stereo multi-purpose CMOS camera.
- Connectivity and communication: Multiplexing, Vehicle to Vehicle (V2V), Vehicle to Infrastructure (V2I)

- Autonomous Vehicle Challenges: Legislation, Environmental/Infrastructure, Moral/Ethical, Insurance, Stakeholder and Market.
- Appropriate vehicle / trailer: EBS (ISO 7638), ABS, ECS and air suspension.
- Electronic systems principles of EBS (Electronic Braking Systems), ESC (Electronic Stability Control), and RSC (Roll Stability Control).
  Operational advantages: higher payloads, lower running costs, safety features, automatic brake application for traction control and soft docking.
- ECAS: Electronically Controlled Suspension Systems to include lift axle systems, load monitoring, vehicle and trailer remote / smart box control, kneeling and height adjustment, security / anti-theft systems, opti-turn and traction help.
- Electronic Transmission systems (AMT): principles and operational / driver advantages and lower running costs.
  Mechanical, hydraulic and Electro-hydraulic steered tag axle systems: principles of self-steer, hydraulic and Electro-Hydraulic tag / pusher axle steering systems and operational advantages including manoeuvrability and RSA criteria.
- Commercial vehicle engine fuel systems to include principles of common rail (XPI) or similar and emission control systems including regeneration (passive and forced).

Learning and Teaching Methods:

This module will be delivered using a combination of interactive lectures, tutorials, group discussions and practical demonstrations.
Delivery will be augmented by audio visual aids, web-based programmes or modules where appropriate.
The emphasis will consistently be to relate the subject matter to current commercial and passenger road vehicle technological applications. Revision assessments will be introduced throughout the semester at stages to reinforce the learning.

Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	52

Module Delivery Duration:

To be delivered in one semester over 4 hours per week (2 x 2 hour lectures)

Assessment

Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Assignment and/or Class Tests	40%	1,2,3,4,5,6,7,8,9,10
Written Examination	60%	1,2,3,4,5,6,7,8,9,10
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	None	

Essential Reading:

Anderson, J. Kalra, N. Oluwatola, O. Stanley, K. Samaras, C. Sorensen, P. (2016) *Autonomous Vehicle Technology*, RAND Corporation, Santa Monica.

Bosch, R. (2018) *Automotive Handbook,* 10th edn. John Wiley and Sons Ltd

Denton, T. (2016) *Electric and Hybrid Electric Vehicles,* Routledge

Denton, T. (2018) *Automobile Electrical and Electronic Systems,* 5th edn. Routledge

Erjavec, J. (2017) *Hybrid, Electric and Fuel-Cell Vehicles*, 2nd edn. Cengage Learning

Supplemental Reading:

Meyboom, A. (2019) *Driverless Urban Futures – A Speculative Atlas for Autonomous Vehicles.* Routledge

Hermann, A., Brenner, W. and Stadler, R. (2018) *Autonomous Driving – How the Driverless Revolution Will Change the World,* 1st ed, Emerald

McGrath, M.E. (2018) *Autonomous Vehicles – Opportunities, Strategies and Disruptions*

Websites

AUVSI – Association for Unmanned Vehicle Systems International
Available at: http://www.auvsi.org/

EasyMile
Available at: http://www.easymile.com/

EGVI – European Green Vehicle Initiative
Available at: https://www.egvi.eu/

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					10	8
Module Title	Advanced Project Management					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module is designed to further develop students' theoretical understanding of essential project management skills and knowledge. Project managers operate in a global environment and work on joint projects characterised by complex supply networks. This ultimately results in a diverse working environment. The importance of organisational culture and the relevant governance & sponsorship structures are key enablers to successful project outcomes. Risk mitigation is fundamental to project management best practise and this activity is explored further throughout the module. Organisations are now required to continuously assess operational capability to ensure it is aligned with strategic decision making, therefore organisational change is now a critical factor in delivering sustainable success to the business. The overall impact of these topics and the role of Project Management are assessed further in this module.
The structure of the module is based around a combination of behavioural skills and specific technical skill sets, which are required for enhance the capabilities for competent project managers.

Learning Outcomes (LO): (to be numbered) For a 5ECTS module a range of 4-10 LOs is recommended	
On Completion of this module, the learner will be able to	
1	Comprehend the function of governance & organisational culture in effective project management
2	Determine a project plan with work schedules to include details of specific activities, responsible parties and timelines
3	Identify control & monitoring techniques and associated communication strategy
4	Summarise awareness of agile project management techniques
5	Evaluate risk management and mitigation control for contingency planning including identifying, analysing and responding to risk
6	Comprehend the role of Leadership & Organisational Culture in effective project management
7	Differentiate the application of varying approaches to project management implementation
8	Identify characteristic relevant for alignment of project outcomes with strategic capabilities of an organisation

Indicative Syllabus:

Lectures will include the following subject areas:

1. Project Governance structures
2. Work schedules associated with project planning
3. Effective project control & communication
4. Agile Project Management implementation
5. Risk mitigation techniques & tools
6. Analysis of organisational culture and its role in successful project management
7. Exploration of approaches used for effective project management
8. Strategy implementation & execution

Learning and Teaching Methods:

Lectures

Class discussion Group Working Case Studies Guest Lectures

Total Teaching Contact Hours	48
Total Self-Directed Learning Hours	152

Module Delivery Duration:
This module will be delivered over one semester: Year 4 / Semester 1

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Continuous Assessment - Students will be tasked with completing a research based written assignment and/or in-class tests	30%	1 - 4
Continuous Assessment: In class assessment	30%	5-8
Students will be assessed using Group Project / Poster Presentation format which will be delivered at the module conclusion	40%	1-8
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	Students who are referred in this module will be required to submit 1 written assignment on a given topic LO 1 – 6 (40%) with a supplemental written exam LO 1 – 6 (60%).	

Essential Reading:

Scott Berkun 2008, Making Things Happen, Mastering Project Management; O'Reilly Media
Paul Roberts 2013, Guide to Project Management: Getting it right and achieving lasting benefit, Wiley
Project Management Institute 2017, A guide to project management Body of Knowledge (PMBOK Guide). 6th edition Project Management Institute

Supplemental Reading:

Harold Kerzner 2017, Project management: a system approach to planning, scheduling and controlling. 12th edition Wiley

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Change Management					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

The transition from the traditional silo-based business paradigm to supply chain management requires traumatic changes in organisational structures, cultures, and business strategy. Unless such changes are properly managed, the firm may suffer from degrading employee morale, frequent bottlenecks, and increased resistance to supply chain transformations. Therefore, supply chain transformation without prepared change management may defeat the purpose of supply chain initiatives. This module introduces the concept of change to learners, established models for change implementation with focus on the role of change agents, an organisation's readiness for change and dealing with subsequent resistance to change from within, with additional analysis on leading change.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to	
1	Determine the context for change in modern operational environment
2	Summarise models for change implementation (Kotter / Lippitt / Lewin)
3	Evaluate readiness for organisational change / Identify resistance to organisational change
4	Interpret the role of a Change Agent in dealing with resistance to change
5	Propose the importance of Organisational Culture in implementing a change plan
6	Comprehend the Role of Leadership in Transformational Change Management

Indicative Syllabus:

Lectures will include the following subject areas:

1. Understand the need for change in modern operational environment
2. Analysis of various models of implementing change in the organisation
3. Application of change management tools used in identifying organisation's readiness for change
4. Understanding triggers for resistance to change and how to a change agent can manage this effectively
5. Understanding of transformational change
6. Why leadership plays an important role in delivering successful change implementation plans

Learning and Teaching Methods:

Lectures
Class discussion
Group Working
Case Studies
Guest Lectures

Total Teaching Contact Hours	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:

This module will be delivered over one semester

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Students will be tasked with completing a research based written assignment and/or in-class tests #1	30%	1-3
Students will be tasked with completing an in-class assessment in short written response and/or MC Quiz format #2	30%	4-6
Students will be assessed using Group Project / Poster Presentation format which will be delivered at the module conclusion #3	40%	1-6
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	None	
(c) Special Repeat Assessment Arrangements	Students who are referred in this module will be required to complete a supplemental written assignment LO 1 – 6 (100%).	

Essential Reading:
Bernard Burnes 2018; Managing Change, 7th Edition, Pearson Education

Barbara Senior & Stephen Swailes 2016, Organizational Change, 5th Edition, FT Publishing Int.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Date of Academic Council approval …….

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Aircraft Leasing					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module will introduce students to the concepts and model of aircraft leasing in the aviation sector.
It will provide the knowledge and skills to learners who wish to pursue a career in this area of the aviation industry.
It comprises knowledge relating to aircraft acquisition and financing, registration and air legislation, managing the maintenance contract and the administration of maintenance and technical records.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Summarise key concepts associated with aircraft acquisition and financing.
2	Evaluate registration procedures and applicable air legislation.
3	Determine the maintenance contract in terms of tasks, inspections, risk asset management, customer priorities, procedures, negotiation and conflict resolution.
4	Analyse maintenance programmes and technical records administration.
5	Evaluate return conditions

Indicative Syllabus:

- Aircraft acquisition and financing
- The business of aircraft leasing
- The role of the technical representative
- Maintenance programmes and bridging checks
- Transfer of aircraft
- Technical Records administration
- Managing the contract
- Working with the customer
- Return conditions

Learning and Teaching Methods:

Statements about the various types of learning and teaching methods that are used in the delivery of the module

Learning and teaching methods for the module will comprise lectures and guest lectures where possible. Class discussion will also be incorporated into the learning and teaching methods.

Total Teaching Contact Hours	36
Total Self-Directed Learning Hours	64

Module Delivery Duration:

Indicate if the module is normally delivered for example over one semester or less, or over one academic year etc.

The module will be delivered over one semester for three contact hours per week.

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
A large project-based assignment on contract analysis, planning and/or return conditions.	100%	1-5
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements		

Essential Reading: (author, date, title, publisher)

Guzhva, V.S., Raghavan, S. and D'Agostino, D.J., 2018. *Aircraft Leasing and Financing: Tools for Success in International Aircraft Acquisition and Management*. Elsevier.

Hanley, D.P., 2017. *Aircraft operating leasing: A legal and practical analysis in the context of public and private international air law*. Kluwer Law International BV.

Supplemental Reading: (author, date, title, publisher)

Khillari, S., 2020. Aircraft Leasing Market Size, Share| Global Research Report, 2026.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
					5	8
Module Title	Transport Challenges and Opportunities					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

This module will explore current and future challenges applicable to the transport sector.
The module is designed to equip the student with the knowledge and skills which will enable them to become effective practitioners within the transportation industry.
It will involve informative guest lectures and discussion with sectoral and industry representatives over the course of the module. It will also enable critical thinking through reflective learning.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Evaluate Irish and EU transport policy and regulations relevant to the transport sector
2	Evaluate current challenges facing the transport sector
3	Analyse current and future strengths for public transport and the logistics industry
4	Propose future opportunities in the sector
5	Combine knowledge from modules on the programme to evaluate future challenges facing the sector

Indicative Syllabus:

- Irish and EU transport policy and regulations relevant to the transport sector.
- Guest lectures from speakers in prominent positions from Ireland/or abroad who will speak on relative and emerging transport issues, developments, challenges and opportunities.

Learning and Teaching Methods:

Guest lectures (3 guest lectures during the module),
Class discussions,
Interactive group exercises,
Discussions of real-world case studies, related issues and overcoming solutions.

Total Teaching Contact Hours	10
Total Self-Directed Learning Hours	90

Module Delivery Duration:

Two lectures of two hours each in duration to introduce the module before the commencement of guest lectures.
Three guest lectures over the semester with a duration of two hours per lecture.

Assessment

Assessment Type	Weighting (%)	LO Assessment (No.)
An assignment will be given on current transport policy and regulations relevant to the transport sector in Ireland and the EU.	25%	1

Three assignments (of equal marks) will be given on a reflection of each guest lecture to include an evaluation and determination of current and future challenges, strengths and opportunities of the organisation and/or transport sector.	25% x 3 = 75%	2-5
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations		
(b) Module Assessment Thresholds		
(c) Special Repeat Assessment Arrangements	Students who are required to repeat assessments must do so at the next available opportunity.	

Essential Reading: (author, date, title, publisher)

Government of Ireland, 2018. Project Ireland 2040: National Development Plan 2018-2027. Available at: https://www.gov.ie/pdf/?file=https://assets.gov.ie/37937/12baa8fe0dcb43a78122fb316dc51277.pdf#page=null

Government of Ireland, 2018. Project Ireland 2040: National Planning Framework. Available at: https://www.gov.ie/pdf/?file=https://assets.gov.ie/166/310818095340-Project-Ireland-2040-NPF.pdf#page=1

TO, H.R. and Barker, M.M., 2001. White paper European transport policy for 2010: time to decide. *Commission of the European Communities Brussels*.

Supplemental Reading: (author, date, title, publisher)

Ponti, M., Boitani, A. and Ramella, F., 2013. The European transport policy: Its main issues. *Case Studies on Transport Policy*, *1*(1-2), pp.53-62.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval ……

M1: Module Descriptor Template

Module Code	Pre-requisite Module codes	Co-Requisite Modules code(s)	ISCED Code	Subject Code	ECTS Credits	NFQ Level (CPD)#
DISS 4000					15	8
Module Title	Dissertation					

This Header should be repeated on each page of the Module

School Responsible:	School of Transport Engineering, Environment and Planning

TÁ LEAGAN GAEILGE DEN FHOIRM SEO AR FÁIL / AN IRISH LANGUAGE VERSION OF THIS FORM IS AVAILABLE

Module Overview:

The dissertation is an integral component of the degree programme. It allows the student to apply the knowledge and skills acquired during the programme. It focuses on a transport related topic and consists of researching the topic gathering and analysing primary and secondary research data, drawing conclusions and presenting the research in a written document. The module aims to develop the practical skills of systematically collecting, organising and presenting information, enable the learner to develop analytical and evaluative skills and develop the learner's ability to present information in a logical and coherent format.

Learning Outcomes (LO): (to be numbered)

For a 5ECTS module a range of 4-10 LOs is recommended

On Completion of this module, the learner will be able to

1	Identify key research questions within the field of study on which you will carry out independent research.
2	Defend a research proposal pertaining to a specific transport-related topic.
3	Combine, collect, analyse, evaluate and organise a body of information pertaining to a specific transport related topic.
4	Judge your management of time effectively whilst working on independent research.
5	Combine existing knowledge and new primary research to the study of a particular topic.
6	Evaluate, summarise and critically assess relevant literature and draft a literature review relevant to the chosen topic
7	Contrast, identify, analyse and interpret suitable data to enable the research question to be answered.
8	Demonstrate evidence of clarity of argument, understanding of the chosen topic area, and presentation of information.

Indicative Syllabus:

Further details are included in the Dissertation Guidelines document.

Learning and Teaching Methods:

The module will be delivered mainly through individual supervision and independent learning**.** The student will work independently on the research topic and present the research for review and assessment. An academic supervisor will be allocated to each student dissertation. The student will work with the supervisor by providing draft material at agreed deadlines. The supervisor will maintain a log of all meetings, agreed deadlines and milestones.

Total Teaching Contact Hours	12
Total Self-Directed Learning Hours	288

Module Delivery Duration:
The dissertation is a linked module taken over two semesters.

Assessment		
Assessment Type	**Weighting (%)**	**LO Assessment (No.)**
Proposal (including the Research Question or Hypothesis, Aims and Objectives). Marks to be awarded at the end of semester one.	5%	1, 2
Progress in semester one in terms of meeting milestones relating to Literature Review, Methodology, Citing (Ability to source, analyse, evaluate and summarise information (scholarly or other) relating to the research topic. Marks to be awarded at the end of semester one.	20%	3, 4, 5, 6, 7
Independent Research (Originality, resourcefulness, creativity and ability to acquire and collate Dissertation-specific information and depth of study)	30%	3, 5, 6, 7
Structure, Quality and Discussion of Results and Overall Presentation of Dissertation	20%	7, 8
Conclusions and recommendations	15%	8
Work-plan, Attendance at Meetings with Supervisor and Consistent Progress (incl. meeting submission deadlines)	10%	1, 2, 3, 4, 5, 6, 7, 8
Module Specific Assessment Arrangements (if applicable)		
(a) Derogations from General Assessment Regulations	None	
(b) Module Assessment Thresholds	40% Pass Mark	
(c) Special Repeat Assessment Arrangements	None	

Essential Reading: (author, date, title, publisher)

Dissertation Guidelines Handbook.

Dissertation Logbook

Walliman, N. 2014. *Your undergraduate dissertation: the essential guide for success.* SAGE. London.

Durdella, N. 2018. *Qualitative dissertation methodology: A guide for research design and methods.* . SAGE. London.

Flick, U., 2015. *Introducing research methodology: A beginner's guide to doing a research project*. Sage. London.

Supplemental Reading: (author, date, title, publisher)

Rudestam, K.E. 2014. *Surviving your dissertation: A comprehensive guide to content and process.* I4th Ed., SAGE, London.

Kumar, R., 2019. *Research methodology: A step-by-step guide for beginners*. Sage Publications Limited.

Version No:		**Amended By**	
Commencement Date		**Associated Programme Codes**	

Modules that are to be offered as Stand-Alone CPD Programmes must have an NFQ level assigned
*Details of the assessment schedule should be contained in the student handbook for the programme stage.

Date of Academic Council approval …….

APPENDIX I: Mapping of Module Learning Outcomes to Assessment Methods

Year	Semester	Module Name	ECTS	Module Learning Outcomes	Module Assessment Methods
1	1	Academic and Professional Skills	5	1. Redefine the necessity for academic and professional skills applicable to the transport industry. 2. Describe the role of communications and teamwork in an organisational context. 3. Describe the methods of communicating information through academic writing, report writing and formal meetings as well as other methods available. 4. State the importance of cross-cultural communications and teamwork in a global market place. 5. Describe presentation skills and skills for the sourcing of information. 6. List the core leadership skills necessary to progress within the transport industry.	Students will be provided with an academic journal paper and asked to describe and present the paper to their peers (35%) - LOs. 1, 2, 3. A research assignment will be given on cross-cultural communications or teamwork in a global market place (35%). LO. 4. Students will be assigned into groups and asked to present a poster relating to core leadership skills necessary to progress within the transport industry (30%). LOs 5, 6.
1	1	Fundamentals of Transport Planning	5	1. Distinguish the four prominent modes of transport. 2. Recognise intermodal and multimodal as key transport concepts as a key driver for firm performance and sustainability initiatives. 3. Explain mechanisms to enhance intermodality of transport services. 4. Determine the importance of planning as a key performance enhancer in logistics operations. 5. Illustrate the role played by government and government agencies in the creation of enablers for intermodal and multimodal transport services. 6. Describe the role and influence of statutory regulations on fleet management practices and impacts. 7. Contribute effectively in a team environment.	1. Continuous Assessment 1 – Presentation (group) – Presentation focusing on the benefits and scope of the implementation of a multi-modal transport system from both a vendor and consumer perspective. (50%) LO's 1-7 2. End of semester written examination (50%) LO's 1-6
1	1	Industry Engagement Project	5	1. Seek out and collaborate with external industry partners in applied research projects. 2. List relevant topics for research (overview). 3. Describe and review a range of projects based on the requirements of individual companies. 4. Define and apply basic research methodologies.	Students are to identify and engage with external industry partners in applied research projects (50%) LOs 1-3. Presentation of industry collaboration research findings (25%) LOs 1-2. Presentation or assignment based on research methodologies sourcing, referencing data and publications (25%) LOs. 3-4
1	1	Intermodal Transport Technologies 1	5	1. Describe the layout, construction and basic operation of road transport vehicles. 2. State the function of the main vehicle systems in order to produce sufficient tranctive effort. 3. Describe the layout, construction and basic operation of marine transport vessels (ship). 4. State the function of the ships main technical systems in order to produce sufficient propulsion power. 5. Describe the layout, construction and basic operation of aviation aircraft. 6. State the function of the aeroplanes main technical systems in order to produce sufficient thrust. 7. Describe the layout, construction and basic operation of rail transport traction vehicles, Locomotives, Diesel Multiple Units (DMUs), Electrical Multiple Units (EMUs) and Railcars. 8. State the function of the rail traction vehicles and how the main technical systems produce enough traction to enable the pull of carriages / wagons.	Students will be assessed by: 1. Assessment 1 - in class assessment consisting of 20 short answer questions on road and marine sections (20%). LO: 1 - 4. 2. Assessment 2 - in class assessment consisting of 20 short answer questions on aviation and rail sections (20%). LO: 5 - 8. 3. End of semester written exam (60%). LO: 1 - 8.

1	1	Introduction to Project Management	5	1. State the key characteristics of a project. 2. Recall the context for project management approach in a business change plan. 3. Redefine a project management approach used in modern operational environments. 4. Describe the modern tools used in project management. 5. Recall the main components of effective communication skills required for successful project implementation. 6. Describe the reasons relevant to successful / unsuccessful delivery of project outcomes.	1. Students will be tasked with completing a research based written assignment (30%) LO 1,2 & 3 2. Students will be tasked with completing an in-class assessment in short written response and/or MC Quiz format (30%) LO 4,5 & 6 3. Students will be assessed using Group Project / Poster Presentation which will be delivered at the module conclusion (40%) - LO 1 through to 6
1	1	Principles of Transport Management	5	1. Describe the functions of management and the roles performed by management in the transport sector 2. Define the decision-making process and apply it to transport related problems 3.List the components a Transport Managers Operational plan 4. Describe how a SWOT and PEST analysis can be applied to a transport firm 5. State the staffing requirement of a transport firm 6. Recall the performance of firms operating in the transport sector by applying principles of control.	1. LO's 1-3 will be assessed using short answer questions and / or MCQ. 25% of module marks 2. LO's 4-6 will be assessed using short answer questions and / or MCQ , 25% of module marks 3. LO's 1-6 will be assessed using Group Presentation / Project which will be delivered at the module conclusion, 50% of the module marks.
1	2	Data Management and Analytics	5	1. Explore database concepts and outline the benefits of various types of database models used to store data. 2. Understand GDPR requirements and demonstrate professional and ethical responsibility for the legal management of data. 3. Design and modify field properties and size in a database that is suitable for use in the transport industry. 4. Extract data, analyse data, run queries, print reports and forms from a database. 5. Design and populate a relational database apply SQL to query and modify data in a DBMS. 6. Demonstrate competency in the use of spreadsheets for financial / business applications. 7. Customise mathematical and logical formulas using spreadsheet functions. 8. Use a spreadsheet package to create formulae and manipulate data for business calculations. 9. Use spreadsheet tools to import data from disparate sources and analyse same to produce insightful reports. 10. Use tools designed to help with forecasting and finding solutions to complicated problems involving your spreadsheet's data and formulas.	Databases written assignment (25%) - LOs 1, 2. Databases in class assessment (25) - LOs 3, 4, 5. Spreadsheets in class assessment 1 (25%) - LOs 6, 7. Spreadsheets in class assessment 2 (25%) - LOs 8, 9, 10.
1	2	Science Fundamentals for Transport	5	1. Demonstrate a satisfactory understanding of the fundamental scientific and engineering principles outlined under Indicative Syllabus. 2. Recognise relevant applications in transport technology of the scientific and engineering principles outlined under Indicative Syllabus. 3. Explain and illustrate applications in transport technology of the scientific and engineering principles outlined under Indicative Syllabus. 4. Perform calculations, analyse and solve basic problems involving the application to transport technology of the scientific and engineering principles outlined under Indicative Syllabus. 5. Engage in independent self-directed learning in order to successfully complete assignments.	End of term assignment (60%) - LOs 1-5. Assignment/In class assessment (40%) - LOs 1-4.

1	2	International Maritime Logistics	5	1. Examine the practices and procedures associated with port and shipping line (deep & short sea) operations. 2. Interpret the worth of an effective maritime operation for the micro and macro-economic environment. 3. Define the differing characteristics of port ownership and management to that of shipping operators. 4. Indicate the significance of a highly integrated port and shipping line operation and relationship. 5. Describe the performance of ports and shipping lines with regard to standardised KPI's. 6. Illustrate possible future developments in the maritime sector. 7. Associate the maritime industry with the development and success of global sustainability initiatives.	1. Continuous Assessment 1 – Presentation (group) - Topic related to the maritime industry and its response to the greening of the industry. (50%) LO's 1 – 7 2. End of semester written examination – (50%) LO's 1 - 6
1	2	Airport and Airline Operations	5	1. Define the Airport Act regulated by the Department of Transport, Tourism and Sport. 2. Describe the airport technical services and identify future strategic planning. 3. Define the airport as a sustainable operational system. 4. Describe the management and team structures of a medium sized airline. 5. Describe how a small airline can market research, budget and monitor its effectiveness. 6. Recognise the areas of training which cabin crew are required to complete.	Assignment/presentations x 2 (30%) - LOs 1-6 End of semester exam or MCQ (70%) - LOs 1-6.
1	2	Introduction to Sustainable Transport	5	1. State the meaning of transport sustainability and its component parts. 2. List the problems affecting transport sustainability in a modern environment. 3. Describe the impact of climate change and its impact on transport sustainability. 4.List and describe possible solutions to overcome the needs of modern society regarding transport sustainability.	1. LO's 1-2 will be assessed using a range on individual assignment, in-class assessment and MCQ - 25% of module marks 2. LO's 1-3 will be assessed using a range on individual assignment, in-class assessment and MCQ - 25% of module marks 3. LO's 1-4, Final assessment methodology consists of a group project presentation where students will research specific themes covered in the module and deliver to peer group. 50% of module marks.
1	2	Fundamentals of Transport Policy and Economics	5	1. Describe the nature and characteristics of transport policy in Ireland 2. State the role of government in developing transport policy 3. Recall the costs and benefits associated with different forms of transport regulation policies 4. Define the supply and demand functions of transport and the determination of price, equilibrium price, elasticity 5. List and described different transport market structures, perfect competition, imperfect competition, monopoly, oligopoly.	1. LO's 1-3 will be assessed using short answer questions and /or MCQ, 25% of module marks 2. LO's 4-5 will be assessed using short answer questions and /or MCQ, - 25% module marks 3. LO's 1-5 will be assessed using Group Presentation / Project which will be delivered at the module conclusion - 50% of the module marks
2	1	Transport Law and Legislation	5	1. Explain the potential impact of legislation at an operational, tactical and strategic level. 2. Demonstrate a thorough knowledge and understanding of the regulatory environment in which the transport industry exists. 3. Evaluate information, data and knowledge to confidently and appropriately make decisions, judgments and recommendations regarding transport operations and legislation. 4. Illustrate the role of legislation with regard to conflict resolution and arbitration. 5. Construct a reasoned argument as to how legislation can be used as a source of competitive advantage. 6. Correlate legal compliance and a long-term business outlook.	1. Continuous Assessment 1 - Group work - case study analysis relating to non-compliance of legal requirements and the resultant effect on customer relationship on a short- and long-term basis. Report and presentation. Report (30%) & Presentation (20%) LO's 1 – 6. 2. End of semester examination – (50%) LO's 1 – 5.

2	1	Intermodal Transport Technologies 2	5	1. Describe the basic function, layout and Operation of a Road vehicle Transmission, Suspension, Steering and Brake System. 2. State the need for a maintenance programme in respect of a road vehicles running gear assemblies, to include CVRT testing, and the implications associated with Health and Safety. 3. Describe the operating principles of the marine low speed 2 stroke diesel engine and advantages of dual fuel systems (diesel and gas) in respect of IMO TIER III emission standards. 4. Predict and discuss the causes of engine crankcase explosions and describe the measures to prevent such instances occurring. 5. Illustrate potential fuel and running cost savings by utilising various waste heat recovery systems from the main propulsion systems. 6.Describe the operating principles of the jet turbine (Brayton cycle) and the main engine sections- compressor section, combustion can, turbine section. 7. Illustrate the main types of jet engine used in commercial aircraft i.e. pure turbo jet, centrifugal and axial compressor engines, low bypass engine, high bypass engine, high bypass turbo fan engine. 8 Comprehend the basic operation of the aircraft fuel system, engine air start systems, APU and use of sustainable jet engine fuel. 9. Describe the basic function, layout and operation of the three main traction vehicles utilised on modern railway systems, namely, locomotives, diesel multiple units (DMU's) and electric multiple units (EMU's-DART). 10. Outline reasons for the importance of adhering to a stringent and well documented regime of all rail vehicles, both traction and carriages and wagons. 11.Ilustrate and discuss the importance of the precision interfaces between all rail vehicles and the civil rail infrastructure it operates on - track and signalling.	LO's (1-2, 9-11) Assessment 1: Assessed by using short answer questions and /or MCQ's - on Road and Rail 20% of Module mark. LO's (3 - 8) Assessment 2: Assessed by using short answer questions and /or MCQ's on Marine and Aviation 20% of Module mark. LO's 1-11 End of term exam 60%
2	1	Transport of Dangerous Goods	5	1. Illustrate the legal requirements of each party in the transport chain with regard to the transport of dangerous goods. 2. Apply the classification system for dangerous goods. 3. Illustrate the expectations with regard to the treatment of goods when being transported as hazardous cargo. 4. Distinguish the regulatory safeguards and commitments for transport units, drivers/pilots and the wider public whilst transporting dangerous cargo. 5. Utilise data and information to decipher the appropriate response during case study analysis. 6. Communicate in an effective, efficient and persuasive manner with regards to legislative compliance and the protection of personnel and general public.	1. In class assessment 1 – short answer questions (25%) LO 1 & 2 2. In class assessment 2 – short answer questions (25%) LO 3 3. In class assessment 3 – short answer questions (25%) LO 4 4. In class assessment 4 – Case study analysis (25%) LO 1-5

2	1	Rail Operations	5	1. Describe the various types of railway infrastructure necessary to operate passenger and freight services. 2. Evaluate Irish and EU transport policy and regulations relevant to the railway transport sector. 3. Describe station and freight yard layouts. 4. Define the different passenger traffics catered for by the railway companies in Ireland: Commuter and Intercity and differentiate how both are operated. 5. Summarise the process used for scheduling activities & allocation of the resources required to successfully deliver an adequate rail transport system. 6. Demonstrate the importance of a robust Safety Management System (SMS) in relation to train operations. 7. Describe how railway timetables are produced and their importance as a key tool in all railway operations (Train crew rosters, Carriage and Wagon allocation, Locomotive and rolling stock maintenance, Platform planning at terminal stations and freight yards, Signalling of trains, Public Address and Station Passenger Information Systems). 8. Discuss how traction vehicles operate, both locomotives, self propelled Diesel Multiple Units, and Electric Trains (DART & Luas) and the future plans by government to extend DART services in the Greater Dublin Area - to Drogheda, Maynooth and Hazelhatch.	1. LO's 1-3 will be assessed using a combination of in-class assessment, assignment submission and / or MCQ - 25% of module marks 2. LO's 4-5 will be assessed using a combination of in-class assessment, assignment submission and / or MCQ - 25% of module marks. 3. LO's 6-8 will be assessed using a range of group project submissions and / or group project or poster presentations. - 50% of module marks
2	1	Transport Marketing	5	1.Define the importance of marketing to a modern transport firm to create and capture customer value and describe how the firms marketing strategy is formulated and implemented. 2. State how the macroenvironment and microenvironment impact on a transport firm and predict the importance marketing information and intelligence to a transport firm. 3. Define customer buying behaviour and describe how transport firms develop new products and services and illustrate how transport firms brand their products and services. 4. Describe how transport firms devise pricing strategies and explain their distribution and Supply Chain strategies. 5. State the key importance of e-marketing to a transport firm is today's environment and describe a transport firms promotion strategies and choices.	1. LO's 1-3 will be assessed using a combination of in-class assessment, assignment submission and / or MCQ - 25% of module marks 2. LO's 4-5 will be assessed using a combination of in-class assessment, assignment submission and / or MCQ - 25% of module marks. 3. LO's 1-5 will be assessed using a range of group project submissions and / or group project or poster presentations. - 50% of module marks
2	1	Financial Management 1	5	1. Appreciate the underlying system of maintaining accounting records and the traceability of transactions to supporting source data. 2. Prepare financial statements from a summary trial balance of a small company. 3. Understand the form and content of full financial statements. 4. Comprehend the results of companies by ratio analysis. 5. Appreciate the importance of good credit control procedures in the timely securing of cash flows from sales made to customers on credit. 6. Understand the various sources of finance available to a business in Ireland and understand how the mix of sources should be tailored to the funding requirements of the company. 7. Understand the differences, both legal and practical, of the types of business entity through which a trade can be carried on (limited companies, sole traders and partnerships). 8. Determining optimal capital structure - the use of debt and equity to fund long term assets.	Examination - (100%) - LOs 1-8

2	2	Customs and International Trade	5	1. Review the relationship and interdependence of international trade and customs. 2. Analyse the role, function and impact of the EU, the World Trade Organisation (WTO) and the World Customs Organisation on international trade procedures and practices. 3. Examine international trading relationships and agreements. 4. Categorise and complete the applicable documentation and procedures for international trade and customs compliance. 5. Appraise the influencers and enablers of best practice in the global logistics sector with regard to customs procedures and practices. 6. Connect the relationship between business compliance, customs authorities and socioeconomics at a macro level.	1. Continuous Assessment – Group work – Process mapping of an import and export process for an Irish based trader, wishing to trade internationally. Data sets and variables specific to each group. Presentation and support documentation. Presentation (25%) & Supporting Documentation (25%) LO's 1 – 6 2. End of semester written examination - 50% LO 1 - 6
2	2	Warehousing and Materials Management	5	1. Comprehend proper material handling processes and objectives. 2. Describe the various material handling activities that take place in a warehouse / distribution centre, their environmental impact and sustainable warehouse measures. 3. Illustrate various methods of achieving 'Lean Warehousing' and elimination of waste material handling activities through the use of appropriate technology, techniques and equipment. 4. Translate / calaculate total warehousing storage, cross docking requirements, consolidation space, material weights / unit loads, sling angle loads, mechanical advantage, frictional losses, centre of gravity and hydraulic forces for lifting equipment. 5. Comprehend from freight statistics, the freight areas within the Irish freight sectors (road, rail, marine and air) whereby extensive material handling activities occur. 6. Describe the principles of operation of various material handling equipment that is used in warehousing, road, rail, marine and air freight operations and its associated unit loads i.e. containers, pallets, wagons and air craft containers.	Assessment 1 week 6 - 20 open ended short answer questions. LO: 1 - 3 (20%) Assessment 2 week 12 - 20 open ended short answer questions. LO: 4 - 6 (20%) End of semester final exam (60%) LO: 1 - 6.
2	2	Sustainable Transport Infrastructure	5	1. Discuss the role of International and National policies in the advancement of Sustainable Transport Infrastructure, 2. Discuss the role of Behaviour Science and Environmental Psychology in the context of trip determination and modal choice, 3. Critically assess a neighbourhood to rate its sustainability from a transport perspective, 4. Critically assess an airport, port or rail service to rate its sustainability from a transport behaviour perspective. Critically assess an airport, port or rail service to rate its sustainability from a transport behaviour perspective.	1. Reflective e-portfolio documenting evidence of learning from the module lectures, fieldtrips and insights from debates and groupwork. (60%) LO: 1-4 2. Groupwork project assessed by poster and participation in class debate event (40%) LO: 1-4
2	2	Supply Chain Management	5	1. Describe the key activities in Supply Chain Management 2. Comprehend the fundamentals of Supply Chain Management Philosophies 3. Recall the importance of performance management in Supply Chain Operations 4. Comprehend the relevance of Supply Chain Resilience 5. Translate the main drivers relevant to Supply Chain efficiencies & Supply Chain responsiveness 6. Describe the cost to serve model and comprehend its role in modern Supply Chain Management.	1. Students will be tasked with completing a research based written assignment (30%) - LO 1-3 2. Students will be tasked with completing module assessment from a combination of in-class assessment in short written response and/or MC Quiz format (30%) - LO 4-6 3. Students will be assessed using Group Project / Poster Presentation format which will be delivered at the module conclusion (40%) - LO 1-6.

2	2	Telematics and the Smart City	5	1. Discuss the role of telematics, ITS, ICT and IoT in the advancement of Transport systems in the 21st Century. 2. Critically appraise examples of ITS applications through case study reviews. 3. Discuss the ethical considerations for telematics and smart cities with particular consideration for the collection and use of personal data. 4. Create an e-portfolio that documents learning on topics covered throughout the module. 5. Understand fleet tracking systems their components and how they work. 6. Demonstrate proficiency in the use of telematic software to plan maintenance schedules. analyse data track vehicles. 7. Combine and analyse data from telematic systems to optimise their output in order to make informed business decisions. 8. Appraise fleet management telematic packages.	Reflective e-portfolio documenting evidence of learning from the module lectures and insights from debates and groupwork. (30%) - LOs 1-6. Groupwork project assessed by poster and participation in class debate event. (20%) - LOs 1-6. Telematics groupwork project assessed by poster. (25%) - LO 5. Telematics assessment / multiple choice questions. (25%) - LOs 6,7, 8
2	2	Transport, Society and Climate Change	5	1. Demonstrate the concept of sustainable development. 2. Apply the theory of sustainable transport with regard to international case examples. 3. Develop the Technology roadmap, the destructive nature of emissions and technical transition from combustion to conversion. 4. Show the implications and consequences of climate change, producing greener and more sustainable energy and negative emissions technology. 5. Develop by calculation the carbon footprint of a working vehicle.	Formal End of Module Examination (60%) - LOs 1-5. Continuous Assessment (40%) - LOs 1-5.
3	1	Advanced Transport Planning	10	1. Determine the marketplace in which logistics service providers (LSP) are immersed. 2. Assess the value of utilisation management for fleet operators. 3. Predict the actions of LSPs to limit and control environmental effects. 4. Value the role of revenue management to LSP's. 5. Evaluate the significance of logistics planning as an enabler of competitive advantage. 6. Summarise management techniques and practices to ensure high and sustainable productivity levels in relation to logistics operations.	1. Continuous Assessment 1 - Response to tender (group), written report and presentation – (30% - written report; 20% presentation) LO's 1-6 2. End of semester written examination – (50%) LO's 1-6
3	1	Human Factors in Transport	5	1. General Human Factors: explain the need to take human factors into account in the Transport industry; apply this knowledge when analyzing accident and investigation reports. 2. Human Performance and Limitations: explain the theoretical fundamentals of information processing, attention, perception and memory; apply this knowledge when describing how vision, hearing, information processing, attention & perception, memory & claustrophobia and physical access are affected by the environment. 3. Social Psychology; give a description of the basic elements of individual & group responsibilities, motivation and de-motivation, peer pressure, 'cultural' issues, team working, management, supervision and leadership in Transport & Logistics. 4. Factors Affecting Performance: explain how time pressures and deadlines affect the workload and the effects of domestic / work-related stress; give a general description of sleep and fatigue, shift work. 5. Communication: give a general description of communication within and between teams; apply this knowledge in preparing sample servicing schedules and task planning. 6. Human Error: explain the fundamental error models and theories used in Transport; apply this knowledge to both avoiding and managing errors.	Mid-term assignment (30%) - LOs 1-4 End of term Final Assignment (70%) - LOs 1-9

3	1	Research Ethics and Techniques	5	1. Identify relevant topics for a research dissertation and undertake a keyword search 2. Review published literature on a selected topic 3. Formulate a research question 4. Select and plan appropriate techniques to a research problem 5. Reflect on performance and activities for the purpose of self-assessment and create an e-portfolio that documents learning on topics covered throughout the module 6. Design, plan and develop a dissertation proposal 7. Undertake a self-assessment on project management skills for independent research and create a project management plan	1. Reflective e-portfolio documenting evidence of learning from the module lectures and insights from debates and groupwork. (60%) LO: 1-7 2. Individual assessments and participation in class journal club and discussion events (40%) LO: 1-7
3	1	Financial Management 2	5	1. Apply key understanding of accounting and financial information in day to day business planning and control. 2. Apply “Management by Exception” principle in cost control. 3. Show the nature of costs and how they are incurred and avoided. 4. Plan for cash flows allowing for known cash flow trends identified by the accounting system. To apply pricing techniques to pricing products and to use credit control techniques to secure prompt payment by customers. 5. Apply the use of documentation flows and other dispute avoidance methods in managing debtors and securing payment. 6. Show the importance of time recovery in service-based businesses such as workshops and hangars (due regard to differing mixes of materials and labour where services are performed to customer order). 7. Develop financial ratios to evaluate business decisions (Gross Margin to Business Purchase Decision; Price Earnings to company valuations and proposals to acquire).	Examination - (75%) - LOs 1-7 Assignment - (25%) - LOs 3-4
3	1	Talent Development	5	1. Compose a CV and cover letter and participate in structured interviews. 2. Develop a strategy for a job application and interview (preparation). 3. Examine HRM Structures, organizational goals and priorities within the transport logistics sector. 4. Analyse performance management and how it should align with business strategy.	- CV and Interview (20%) - LOs 1-2 - Assignment – presentation or MCQ (60%) - LOs 3-4
3	2	Work Placement	30	1. Analyse and apply theory into practice from a range of programme modules. 2. Show the significance of the placement in developing the technical and practical skills which contribute to key graduate attributes desired in the transport industry. 3. Apply and analyse the challenges and problems which arose within the work placement and detail how these problems and challenges were resolved. 4. Analyse and apply theory into practice from a range of programme modules. 5. Reflect on the significance of the placement in developing the technical and practical skills which contribute to key graduate attributes desired in the transport industry.	Demonstration of initiative in applying for and securing a relevant placement in the transport sector (25%) LO-1-2. Report from the industry mentor (30%) LO-1-5. Report from the academic supervisor (10%) LO-1-5. Reflective logbook (online) (15%) LO-1-5. Final presentation and report of work experience (20%) LO-1- 5

4	1	Strategic Management	10	1. Evaluate the role and significance of a robust strategy in the modern firm. 2. Assess the significance of the triple bottom line in strategy selection and implementation. 3. Utilise measurement tools such as IFE and SWOT to construct an internal evaluation matrix. 4. Evaluate the external market in which transport companies operate using EFE, PESTEL and Porters 5 forces model. 5. Appraise strategy options that are available for a globally orientated firm. 6. Design a strategy for an Irish transport company which trades internationally.	1. Continuous Assessment 1 – Presentation (group) – Presentation focusing on assessing the current position of a transport related business and developing a strategy that allows for growth and continuity. (50%) LO's 1-6 2. End of semester written examination. (50%) LO's 1-6
4	1	E-Mobility and Advanced Vehicle Technologies	10	1. Evaluate the fundamental factors influencing the demand for Electro-Mobility (E-Mobility) solutions and Advanced Driver Assistance Systems (ADAS). 2. Analyse the interactive relationship between the four segments of the e-mobility ecosystem. 3. Justify the incremental technological progress towards vehicle electrification. 4. Explain the functionality and benefits derived from automotive advanced driver assistance systems. 5. Identify the inherent challenges associated with autonomous vehicle technological progress to date. 6. Appraise the relevant electronic braking and suspension systems required for an RSA approved appropriate vehicle or trailer (46 tonne GCW). 7. Explain the principles of operation of commercial vehicle and trailer electronic braking systems that assist in vehicle safety and stability with consideration for operational advantages. 8. Summarise the operational advantages of utilising ECAS in commercial vehicles / trailers and passenger vehicles. 9. Determine the operational and competitive advantages of utilising commercial vehicle electronically controlled transmission and steering systems. 10. Summarise the principles of operation of modern commercial vehicle fuel and emission control systems relevant to Euro VI standards.	1. Assignment and/or in-class tests - Module assessment weighting = 40%, Learning Outcomes assessed (LO: 1 - 10). 2. Written invigilated examination - Module assessment weighting = 60%, Learning Outcomes assessed (LO: 1 - 10).
4	1	Advanced Project Management	10	1. Comprehend the function of governance & organisational culture in effective project management 2. Determine a project plan with work schedules to include details of specific activities, responsible parties and timelines 3. Identify control & monitoring techniques and associated communication strategy 4. Summarise awareness of agile project management techniques 5. Evaluate risk management and mitigation control for contingency planning including identifying, analysing and responding to risk 6. Comprehend the role of Leadership & Organisational Culture in effective project management 7. Differentiate the application of varying approaches to project management implementation 8. Identify characteristic relevant for alignment of project outcomes with strategic capabilities of an organisation	1. Students will be tasked with completing a research based written assignment and/or in-class tests (30%) - LO 1 - 4 2. Students will be tasked with completing an in-class assessment in short written response and/or MC Quiz format (30%) - LO 5 - 8 3. Students will be assessed using Group Project / Poster Presentation format which will be delivered at the module conclusion (40%) - LO 1-8

4	2	Change Management	5	1. Determine the context for change in modern operational environment 2.Summarise models for change implementation (Kotter / Lippitt / Lewin) 3. Evaluate readiness for organisational change / Identify resistance to organisational change 4. Interpret the role of a Change Agent 5. Propose the importance of Organisational Culture in implementing a change plan 6. Comprehend the Role of Leadership in Transformational Change Management	1. Students will be tasked with completing a research based written assignment and/or in-class tests - (30%) LO 1-3 2. Students will be tasked with completing an in-class assessment in short written response and/or MC Quiz format - (30%) LO 4 -6 3. Students will be assessed using Group Project / Poster Presentation format which will be delivered at the module conclusion (40%) - LO 1-6
4	2	Transport Challenges and Opportunities	5	1. Evaluate Irish and EU transport policy and regulations relevant to the transport sector. 2. Evaluate current challenges facing the transport sector. 3. Analyse current and future strengths for public transport and the logistics industry. 4. Propose future opportunities in the sector. 5. Combine knowledge from modules on the programme to evaluate future challenges facing the sector	- An assignment will be given on current transport policy and regulations relevant to the transport sector in Ireland and the EU. (25%) - LO 1. - Three assignments (of equal marks) will be given on a reflection of each guest lecture to include an evaluation and determination of current and future challenges, strengths and opportunities of the organisation and/or transport sector. (25% x 3) -LOs 2-5.
4	2	Aircraft Leasing	5	1. Summarise key concepts associated with aircraft acquisition and financing. 2. Evaluate registration procedures and applicable air legislation. 3. Determine the maintenance contract in terms of tasks, inspections, risk asset management, customer priorities, procedures, negotiation and conflict resolution. 4. Analyse maintenance programmes and technical records administration. 5. Evaluate and determine return conditions.	- A large project-based assignment on contract analysis, planning and/or return condition (100%) - LOs 1-5
4	1+2	Dissertation	15	1. Identify key research questions within the field of study on which you will carry out independent research. 2. Defend a research proposal pertaining to a specific transport-related topic. 3. Combine, collect, analyse, evaluate and organise a body of information pertaining to a specific transport related topic. 4. Judge your management of time effectively whilst working on independent research. 5. Combine existing knowledge and new primary research to the study of a particular topic. 6. Evaluate, summarise and critically assess relevant literature and draft a literature review relevant to the chosen topic. 7. Contrast, identify, analyse and interpret suitable data to enable the research question to be answered. 8. Demonstrate evidence of clarity of argument, understanding of the chosen topic area, and presentation of information.	LO's 1-8 1. Proposal (including the Research Question or Hypothesis, Aims and Objectives). Marks to be awarded at the end of semester one. - 5% of module marks. 2. Progress in semester one in terms of meeting milestones relating to Literature Review, Methodology, Citing (Ability to source, analyse, evaluate and summarise information (scholarly or other) relating to the research topic. Marks to be awarded at the end of semester one. - 20% of module marks. 3. Independent Research (Originality, resourcefulness, creativity and ability to acquire and collate Dissertation-specific information and depth of study) - 30% of module marks. 4. Structure, Quality and Discussion of Results and Overall Presentation of Dissertation - 20% of module marks. 5. Conclusions and recommendations - 15% of module marks 6. Work-plan, Attendance at Meetings with Supervisor and Consistent Progress (incl. meeting submission deadlines) - 10% of module marks