

MQF Level 4

AE4-02-21

Advanced Diploma in Transportation and Logistics Management

Course Specification

Course Description

One of the core requirements of industry is the procurement, storage and dispatching of goods. In today's business world it has become imperative to effectively handle transportation and logistics. This course is intended for candidates who wish to embark on a career in this important sector. The course aims to develop professionals who are knowledgeable, technically competent and able to adapt in the transportation and logistics discipline as they embrace new technological advancements and challenges. It also prepares learners in social, entrepreneurial and leadership qualities towards tackling logistical challenges innovatively, creatively and ethically.

Successful learners can progress to the Bachelor of Arts (Honours) in Business Enterprise.

Programme Learning Outcomes

At the end of the programme the students are able to:

- 1. Adapt to the transportation and logistics discipline to embrace new technological advancement and challenges.
- 2. Solve logistical challenges innovatively, creatively and ethically for supply chain operations.
- 3. Devise cost-effective strategies for incoming and outgoing goods.
- 4. Apply supply chain concepts to real-life transport and logistics scenarios.

Entry Requirements

Any MCAST Level 3 Diploma

OR

4 SEC/O-Level/SSC&P (Level 3) passes

Key Information

Awarding Body - MCAST

Accreditation Status - Accredited via MCAST's Self Accreditation Process (MCAST holds Self-Accrediting Status as per 1st schedule of Legal Notice 296/2012)

Type of Programme: Qualification

MQF Level	Examples of Qualifications	'Qualification' Minimum Credits Required	'Award' Credits Required
Level 8	Doctoral Degree Third Cycle Bologna Process	NA	NA
Level 7	Masters Second Cycle Bologna Process Post-Graduate Diploma Post-Graduate Certificate	90-120 60 30	Less than 30
Level 6	Bachelor ²³ /Bachelor (Hons.) ²⁴ First Cycle Bologna Process	180-240	Less than 180
Level 5	Short Cycle Qualification Undergraduate Higher Diploma Undergraduate Diploma Undergraduate Certificate VET Level 5 Programme ²⁶	120 90 60 30 60-120	Less than 60
Level 4	Pre-Tertiary Certificate VET Level 4 Programme ²⁶ MATSEC Certificate	30 120 NA	Less than 120
Level 3	VET Level 3 Programme ²⁷ General and Subject Certificate	60 NA	Less than 60
Level 2	VET Level 2 Programme ²⁸ General and Subject Certificate	60 NA	Less than 60
Level 1	VET Level 1 Programme ²⁹ General and Subject Certificate	40 NA	Less than 40
Introductory Level A	Preparatory Programme	30	Less than 30
Introductory Level B	Pre-entry Basic Skills Course	30	Less than 30

Table 1: Minimum number of credits for 'Qualifications' and parameters for 'Awards'

Fig.1: p56, Ministry for Education and Employment & National Commission for Further and Higher Education Malta (2016). *Referencing Report*, 4th Edition. NCFHE.

Total number of Hours: 3000

Mode of attendance: Full Time

Duration: 2 Years

Target audience for MCAST full-time courses is 16 to 65+

Target group: Students exiting compulsory education

The official language of instruction at MCAST is English. All notes and textbooks are in English (except for language courses which will be in the respective language being instructed). International candidates will be requested to meet English language certification requirements for access to the course.

This course will be offered at

MCAST has four campuses as follows:

MCAST Main Campus Triq Kordin, Paola, Malta

All courses except for the Institute for the Creative Arts, Centre of Agriculture, Aquatics and Animal Sciences are offered here.

Institute for the Creative Arts Mosta Campus Misraħ Għonoq Tarġa Gap, Mosta

Institute of Applied Sciences, Centre of Agriculture, Aquatics and Animal Sciences, Luqa Road, Qormi

Gozo Campus J.F. De Chambray Street MCAST, Għajnsielem Gozo

Teaching, Learning and Assessment

The programmes offered are vocational in nature and entail both theoretical lectures delivered in classes as well as practical elements that are delivered in laboratories, workshops, salons, simulators as the module requirements dictate.

Each module or unit entails a number of in person and/or online contact learning hours that are delivered by the lecturer or tutor directly (See also section 'Total Learning Hours).

Access to all resources is provided to all registered students. These include study resources in paper or electronic format through the Library and Resource Centre as well as tools, software, equipment and machinery that are provided by the respective institutes depending on the requirements of the course or module.

Students may however be required to provide consumable material for use during practical sessions and projects unless these are explicitly provided by the College.

All Units of study are assessed throughout the academic year through continuous assessment using a variety of assessment tools. Coursework tasks are exclusively based on the Learning Outcomes and Grading Criteria as prescribed in the course specification. The Learning Outcomes and Grading Criteria are communicated to the Student via the coursework documentation.

The method of assessment shall reflect the Level, credit points (ECTS) and the schedule of time-tabled/non-timetabled hours of learning of each study unit. A variety of assessment instruments, not solely Time Constrained Assignments/Exams, are used to gather and interpret evidence of Student competence toward pre-established grading criteria that are aligned to the learning outcomes of each unit of the programme of study.

Grading criteria are assessed through a number of tasks, each task being assigned a number of marks. The number of grading criteria is included in the respective Programme Specification.

The distribution of marks and assessment mode depends on the nature and objectives of the unit in question.

Coursework shall normally be completed during the semester in which the Unit is delivered.

Time-constrained assignments may be held between 8 am and 8 pm during the delivery period of a Unit, or at the end of the semester in which the Unit is completed. The dates are notified and published on the Institute notice boards or through other means of communication.

Certain circumstances (such as but not limited to the Covid 19 pandemic) may lead Institutes and Centres to hold teaching and assessment remotely (online) as per MCAST QA Policy and Standard for Online Teaching, Learning and Assessment (Doc 020) available via link <u>https://www.mcast.edu.mt/college-documents/</u>

The Programme Regulations referenced below apply. (DOC 004* available at: link https://www.mcast.edu.mt/college-documents/

Total Learning Hours

The total learning hours required for each unit or module are determined as follows:

Credits (ECTS)	Indicative contact hours	Total Student workload (hrs)	Self-Learning and Assessment Hours
1	5 - 10 hrs	25 hrs	20-15 hrs*
2	10 - 20 hrs	50 hrs	40-30 hrs*
3	15 - 30 hrs	75 hrs	60-45 hrs*
4	20 - 40 hrs	100 hrs	80-60 hrs*
6	30 - 60 hrs	150 Hrs	120-90 hrs*
9	45 - 90 hrs	225 hrs	180-135 hrs*
12	60 - 120 hrs	300 hrs	240-180 hrs*

* The 'Self-Learning and Assessment Hours' amount to the difference between the contact hours and total student workload.

Grading system

All MCAST programmes adopt a learner centred approach through the focus on Learning Outcomes. The assessment of MCAST programmes is criterion-referenced and thus

assessors are required to assess learners' evidence against a pre-determined set of Learning Outcomes and assessment criteria.

For a student to be deemed to have successfully passed a unit, a minimum of 50% (grade D) must be achieved. In case of part time programmes, the student must achieve a minimum of 45% to successfully pass the unit.

All units are individually graded as follows:

A* (90-100) A (80-89) B (70-79) C (60-69) D (50-59) Unsatisfactory work is graded as 'U'.

Work-based learning units are graded on a Pass/Fail basis only.

Detailed information regarding the grading system may be found in the following document: DOC 004 available at: link <u>https://www.mcast.edu.mt/college-documents/</u>

Intake Dates

•MCAST opens calls for application once a year between July and August of each year for prospective applicants residing in MALTA.

•Applications to full-time courses from international students not residing in MALTA are accepted between April and Mid-August.

•For exact dates re calls for applications please follow this link https://www.mcast.edu.mt/online-applications-2/

<u>Course Fees</u>

MCAST course are free for Maltese and EU candidates. International candidates coming from outside the EU need to pay fees for the respective course. Course fees are set on a per-level and course duration basis. For access to course fee structure and payment methods please visit <u>https://www.mcast.edu.mt/fee-payments-for-non-eucandidates/</u>.

Method of Application

Applications to full-time courses are received online via the College Management Information System. Candidates can log in using Maltese Electronic ID (eID) or European eIDAS (electronic identification and trust services) to access the system directly and create an account as the identity is verified electronically via these secure services.

Non-EU candidates need to request account creation though an online form by providing proof of identification and basic data. Once the identity is verified and the account is created the candidate may proceed with the online application according to the same instructions applicable to all other candidates.

Non-EU candidates require a study visa in order to travel to Malta and joint the course applied for. For further information re study-visa please access https://www.identitymalta.com/unit/central-visa-unit/.

For access to instructions on how to apply online please visit <u>https://www.mcast.edu.mt/online-applications-2/</u>

Contact details for requesting further information about future learning opportunities:

MCAST Career Guidance

Tel: 2398 7135/6 Email: career.guidance@mcast.edu.mt

Current Approved Programme Structure

Unit Code	Unit Title	ECTS	Year	Semester
Core Units				
ETLGC-406-2000	Operational Procurement Principles	6	1	2
ETLGC-406-2001	Introduction To Transportation Economics	6	1	2
ETLGC-406-2002	Introduction to Logistics and Supply Chain Management	6	1	1
ETLGC-406-2003	Introduction to Warehouse Management	6	1	1
ETLGC-406-2004	Safety for Logistics	6	1	1
ETLGC-406-2005	Inbound Logistics	6	1	2
ETLGC-406-2006	Supply Chain Network - Introduction	6	1	1
ETLGC-406-2007	Introduction to the Air Transport Industry	6	1	2
CDKSK-406-2007	Mathematics	6	1	Year
CDKSK-406-2001	English	6	1	Year
ETLGC-406-2008	Use of Transportation Simulation Model	6	2	1
ETLGC-406-2009	International Business - Global Supply Chain	6	2	1
ETLGC-406-2010	Transport of People	6	2	Year
ETLGC-406-2011	GIS for Logistics	6	2	Year
ETLGC-406-2012	Transportation and Logistics Project	6	2	2
ETLGC-406-2013	Costing for Logistics	6	2	1
CDKSK-406-2109	Information Technology	6	2	Year
CDKSK-404-1915	Employability and Entrepreneurial Skills	4	2	1
CDKSK-402-2104	Community Social Responsibility	2	2	1
Total ECTS		108	/	/

Choose One of the Following Options						
Option 1 - SEA						
ETSEA-406-2000	Principles of Marine Transportation	6	2	2		
ETSEA-406-2001	Maritime Law	6	2	2		
Option 2 - LAND						
ETLND-406-2000	Fleet Operations	6	2	2		
ETLND-406-2001	Intermodal Freight Operations	6	2	2		
Option 3- AIR						
ETAVN-406-1509	06-1509 Cargo Operations		2	2		
ETAIR-406-2000	Logistics for aircraft maintenance	6	2	2		
Total ECTS		12	/	/		
Total ECTS		120	/	/		

ETLGC-406-2000: Operational Procurement Principles

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit will expose the learner to the basic principles of operational procurement which are necessary to support incoming flows within organisations. It will specifically delve into the underlying purchasing concepts which would be essential to understand the knowledge concepts of procurement.

This unit will start by outlining the principles of a value chain, and the role and contribution of procurement within a supply chain. It will then go on to explain the fundamental differences between the traditional push and customer-focused pull systems.

Another area of relevance to this unit would be the practices adopted for sourcing and supplier evaluation. The learner would then be able to understand the value of acquiring these skills in achieving the initial stages of the procurement process.

The final part of the unit is aimed to give the learner a solid understanding of the importance of negotiation within the procurement process. This would allow the learner to have sufficient knowledge required when negotiating with suppliers prior to awarding a contract and, also, when relating to suppliers within the latter part of the procurement process. The latter includes contract management, supplier relationship management and supplier development.

Learning Outcomes

- 1. Understand the basic principles of value within a supply chain.
- 2. Understand the different stages within the procurement process.
- 3. Apply different evaluative tools for supplier selection.
- 4. Distinguish between the different negotiation techniques utilised within the procurement process.

ETLGC-406-2001: Introduction to Transportation Economics

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

Initially, the learner will be introduced to the history of transportation and how, by its importance, transportation has influenced the growth of the world's economy. Eventually, the commencement of global trading will be discussed along with how the world economy has improved as a result of the development of transportation. Furthermore, free and common markets, their advantages and disadvantages along with the trade barriers will be discussed.

The learner will then be briefed about the functions of economics within an economy, and the various economic tools used within the logistics sector. This will be followed by an introduction of how demand and supply are shaped in the transportation industry. Also, the main demand and supply influencers and their impact on each other will be highly deliberated. This unit will go in further depth by covering other various topics, such as, the understanding of transport demand elasticity, transportation as a derived demand, and finding the equilibrium between demand and supply.

This unit will then focus on the meaning of a market in economics and the different market structures. This discussion will continue by highlighting their main differences. Furthermore, the direct and indirect costs involved in transportation, both fixed and not, will be deliberated. During this unit, the student will also receive the opportunity to become familiarised with other economic tools including the price differentiation and price discrimination. These tools would be contextualised and developed for the transportation and logistics sector.

In conclusion, this unit will discuss the sustainability of transportation from an economical point of view, and the contribution of sustainability to the economy. This topic is gaining importance globally; hence, the most sustainable and economical modes of transport will be evaluated. This evaluation would be supported by a discussion on the actions adopted globally and their contribution to the respective economies.

- 1. Understand the role of transportation in the global trade.
- 2. Recognise the demand and supply influencers, in the logistics industry, and their impact in the supply chain.
- 3. Identify the different market structures and their main benefits and weaknesses.
- 4. Understand how a dynamic macro-economic structure would impact transport operation costs.
- 5. Recognise the importance of adopting sustainable transportation for logistics operations as a contributor to the economy.

ETLGC-406-2002: Introduction to Logistics and Supply Chain Management

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit starts by looking at the fundamental concepts of logistics and distribution. By delving into the components of a supply chain, the learner will investigate the developments that brace the integration and globalisation of a supply chain. An introduction to models of service quality and expected levels of customer service will lead the learner to understand the supporting customer service required within supply chain operations and distribution. The first part of the unit will also introduce the learner to the reverse logistics concepts and its impact on modern supply chains.

The next topic will then introduce the learner to the physical distribution channel types and structures. Then the learner will be introduced to the broader external environment, to be able to discuss how these external environmental factors, along with internal environmental factors, may present challenges to transport and logistics operations.

The unit will conclude by providing the learner with an opportunity to apply logistics principle to a range of supply chain scenarios.

Learning Outcomes

- 1. Understand the concepts of logistics and distribution, including reverse logistics.
- 2. Understand distribution channels as supported by transport and logistics services.
- 3. Discuss key issues and challenges for transportation and logistics.
- 4. Apply logistics principles in supply chain contexts.

ETLGC-406-2003: Introduction to Warehouse Management

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit is designed to introduce the learner to the basic principles of warehousing and storage that support logistics and supply chain operations. The learner will learn to identify appropriate equipment used within warehouses and storage environments. Storage and handling systems for palletised and non-palletised cargo used within automated and semi-automated warehouses will also be introduced.

The unit will continue by preparing the learner to apply the basic concepts of warehouse design for efficient logistics and distribution operations.

Essential warehouse management and information that support performance monitoring in warehouse operations will be covered to introduce the learner to the supervisory role of a storekeeper within a storage environment.

Learning Outcomes

- 1. Understand the basic principles of warehousing and storage to support logistics and supply chain operations.
- 2. Identify storage and handling systems in warehouse operations.
- 3. Apply the basic concepts of warehouse design for efficient logistics operations.
- 4. Understand warehouse management and information to support logistics performance monitoring.

ETLGC-406-2004: Safety for Logistics

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit will commence by giving an overview on how to protect employees and stock, within the warehouses and distribution centres. The focus will be on what actions can employees and managers take in order to prevent damages, increase security and eliminate other possible risks. These issues are important as they may incur additional costs to the company and increase the risk of injuries at work.

The next topic will cover the safety of the movement of workers and goods throughout the whole supply chain nodes, with special focus on warehouses and distribution centres. This will give the learner the opportunity to understand the importance of health and safety precautions which are required whilst working in such ambient, especially when it comes to handling of goods at these types of workplaces. In addition, this unit will discuss the safety required to load and unload trailers and containers and the planning required to stack them to the maximum possible capacity in the safest manner.

Then the learner will be introduced to various international regulators, such as, the local OHSAA and the European Union directives. These regulations will introduce the learner to the importance of operating and promoting a healthy and safe environment within the logistics industry. Moreover, the role and function of the local authority and legislation responsible for the health and safety will also be covered and evaluated. The learner will be briefed about the essential utilisation of personal protection equipment (PPE) throughout logistics and transport operations. Furthermore, this course will also cover various licenses which are necessary to operate within the transport and logistics environment. This will include, but not limited to, the special license to drive forklift and the license required to operate a warehouse and retail shop.

Along with these two main topics, the learner will also be introduced to various European and worldwide legislations to abide with for the safe transportation of goods. This unit will, thus, cover the IMDG Code which covers the safety of cargo transportation of dangerous goods by Sea, the CMR convention which covers various legislations with regards to road transportation and ADR, and the European directive related to the international transport of dangerous goods by road, to mention a few.

- 1. Recognise the functions of holding stock safely in different stages of the supply chain.
- 2. Understand the role and importance of the regulators which are responsible for the health and safety in the transport and logistics sector.
- 3. Recognise the international and local guidelines and directives which promote health and safety within different nodes of the supply chain.
- 4. Appraise how implementing health and safety guidelines and directives throughout the supply chain impact the companies' day-to-day operations.

ETLGC-406-2005: Inbound Logistics

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit will familiarise the learner with the identification of stock for different purposes. Then the different documentation and procedures that support incoming and outgoing goods will be introduced. Correct documentation and its detailing are an essential part of the procedures that support the receipt and issue of stock for distribution purposes within a supply chain. The learner will be provided with opportunities to check stock and apply stock taking procedures as an integral step in the process of maintaining healthy levels of stock within any distribution channel partner.

This unit will then concentrate on the concept of holding a safety stock within different nodes of a supply chain. The learner will become familiar with the importance and role of inventory and why it is required. Additionally, the unit will discuss what effect will uncertain demands have on logistics and the inventory.

This unit will also cover the most utilised type of stocking methods used within the logistics industry along with their fundamentals. Furthermore, the learner will also obtain the knowledge about the critical decisions that logisticians take with regards to stock, such as, order quantity and the timing of orders of fresh stock. Oppositely, it will also be discussed how logistics companies, who practice the just-in-time theory, manage to function their supply chain without stock.

This unit will provide the learner with the opportunity to apply basic stock control techniques adopted for different purposes.

- 1. Understand the identification of stock, along with the related documentation and procedures for receipt and issue of stock, for different purposes.
- 2. Apply stock checking and stock taking procedures that support distribution purposes.
- 3. Understand inventory planning and replenishment for different supply chain components.
- 4. Apply basic stock control techniques adopted for different logistics purposes.

ETLGC-406-2006: Supply Chain Network - Introduction

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

In this unit, the learner will attain competence in understanding the operation of the various nodes and links within a supply chain network. The focal roles of the distribution centres and warehouses within supply chain networks will be emphasised.

The next topic will then shift the focus towards enabling the learner to comprehend the planning and design of a supply chain network. This will include decision-making criteria that supply chain managers encounter throughout the designing and planning process of a supply chain network. This will include the location, sourcing, inventory and transportation decisions. The learner will be presented with key network trends and strategies, focusing mainly on the outsourcing strategies, for both vertical and horizontal collaborations.

The learner will also be introduced to the latest concept of network competition. By this, the learner will be able to understand how various collaborators work within supply chains and how focal firms attempt to integrate their supply chains as a network. The learner will also familiarise with the current major business transformations along with the 3rd party and 4th party logistics models and concepts. Real-life examples of how companies transformed their business and their supply chain networks to keep their business relevant will, also be presented within this Unit.

Learning Outcomes

- 1. Understand the role, importance and operation of each node of a supply chain network.
- 2. Analyse the design of supply chains in order to have the most effective network possible.
- 3. Recognise the importance of outsourcing and the difference between horizontal and vertical partnerships.
- 4. Assess the various changes occurring in the new era of supply chain network competition.

ETLGC-406-2007: Introduction to the Air Transport Industry

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit highlight the importance of air transport as being an important enabler to help in economic growth and developments. Air transport provides vital connectivity on a national, international and regional scale. It helps promote tourism, transport of goods and create employment. The economic benefits acquired through connecting people and business around the world through air transport which is also part of the aviation industry. The social benefits being achieved through a wider range of communication between different parts of the world and having access to remote areas have been enhanced through air transport.

Learning Outcomes

- 1. Explain the importance of air transportation.
- 2. Examine how air transportation for passengers works.
- 3. Examine the role of the Airfreight industry in today's world.
- 4. Identify the disadvantages and advantages of air transportation for both passenger and cargo and the importance of quality and safety.
- 5. Review the future of the airline industry as regards to passenger and cargo also from the technological aspect.

ETLGC-406-2008: Use of Transportation Simulation Model

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

Modelling and simulation are an excellent way to get results from researching without spending a lot of money and time on prototype creation. Simulation and modelling has been instrumental in scientific advances within major fields like health, security, as well as a source of technological competitiveness globally. Simulation and modelling has become an industry norm for Supply Chain and logistics, offering major breakthroughs in optimization within the planning, control, congestion, safety, and environmental protection aspects of network routing and optimization.

This unit will guide the learner through analysing the complex transportation systems accurately and under varying operational conditions and/or scenarios to predict behaviour for planning purposes to provide adequate academic answers to today's emerging transportation technology management challenges. It will provide a comprehensive, in-depth, and state-of-the-art summary of the important aspects of transportation analysis and modelling simulations.

The unit starts with a walkthrough of the fundamentals of modelling since they represent the largest portion of transportation analysis, with mathematical background to describe the real transportation systems and how they correspond to respective modelling methodologies. This section also covers object motion and time space diagrams, transport network basics, and mathematical programming applications in the traffic and transport sector.

Following this the most frequently used models will be presented which will require supplemental reading as the number of models is expansive and elaborate.

The until will then focus on the Identification of Traffic Flow Theory and capacity and level of service within different transportation modes. This includes descriptions of the basic flow variables, speed-density relationship, flow-density relationship, speed-flow, and fundamental diagrams of traffic flow, micro-simulation traffic models, car following models, and network flow diagrams.

After that Traffic Control techniques related to road, rail, public transport, and traffic controls systems will be examined. The section covers various traffic control measures,

methods, and strategies that should be implemented to use the existing transport infrastructure to an optimal level.

Following this the unit will analyse Transportation planning methods and techniques including the four-step planning procedure and the relationship between logistic systems and transportation which includes trip generation, trip distribution, modal split, and route choice. Wardrop's Principle and traffic network equilibrium conditions, the Braess's Paradox, and transport capacity expansions will be covered as well. Dynamic traffic assignment problems, transport demand analysis based on discrete choice models, and activity-based travel demands will also be covered.

Finally, the unit will assess Basic transportation economics concepts and the impacts of transportation systems on society and the environment. This includes fixed and variable costs in transportation, economies of scale, relationship between supply, demand, and infrastructure costs will also be covered. The main impacts looked at will be the continuous expansion and maintenance of transport systems globally and how energy/fuel consumption are related to noise, traffic incidents, accidents, and hazards to the environment.

Learning Outcomes

- 1. Review transportation history, classification of transportation systems and traffic/transport analysis techniques.
- 2. Identify the Traffic Flow Theory, capacity and level of service within different transportation modes.
- 3. Examine Traffic Control techniques related to road, rail, public transport and traffic controls systems.
- 4. Analyse transportation planning methods and techniques including the four-step planning procedure and the relationship between logistic systems and transportation.
- 5. Assess basic transportation economic concepts and the impacts of transportation systems on society and the environment.

ETLGC-406-2009: International Business - Global Supply Chain

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

Initially, the learner will be introduced to the basic knowledge of the general terms and concepts used within the logistics and global supply chain industry. These include, but not limited to, the meaning and understanding of Global Supply Chain, Logistics, Transportation and Multi-Modalism along with the various factors that encourage trade. This will enable the learner to understand the different theories, factors, challenges and difficulties that drive and inhibit supply chains.

Global supply chains commence from the extraction of raw materials. Hence, this topic will give the opportunity to the learner to analyse where the main raw materials are situated geographically. In addition, this topic will highlight the main seaports that are renowned for exporting these raw materials and, also, the partly and finished goods.

This unit will then provide a thorough overview of each component within the supply chain and their operation management with a global perspective. This would include the concepts of decentralisation, reverse logistics, outsourcing and the selection process of international logistics operators. Additionally, the learner will be presented with different real-life case studies of global supply chains in order to maximise their understanding of how major global companies mitigate the theoretical models into practice.

The learner will, furthermore, be introduced to different risks that supply chains encounter; both daily and in extreme or one-off occurrences. Learners will, thus, be taught how to identify, assess, document and decide whether to mitigate or eliminate risks. Moreover, as global supply chains are highly vulnerable, especially due to their complexity, the learner will become familiar with the actions taken by companies in order to maintain their resilience in different challenges.

This unit will also go through various documentation and operational processes that supply chain managers deal with on a regular basis and in order to render transportation within global supply chains successfully. This will also include the various IT systems used to help facilitate the supply chains whilst assisting logisticians on their daily work.

- 1. Identify the basic tools used when operating within a Global Supply Chain.
- 2. Examine how different supply chains operate on a global scale.
- 3. Understand the risk management concept and the vulnerabilities found within a global supply chain.
- 4. Understand the operation management process within the whole supply chain, including the documentation processes and the importance of harmonisation through the use of integrated IT systems.

ETLGC-406-2010: Transport of People

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit provides information of transport of people on a national and international scenario. It gives an insight of how transport has changed along with the movement needs and attitudes of people. Transportation systems alike have become fundamental components of economic activities. A growing share of the wealth is thus linked to trade and distribution. Important elements to consider is the operation to control and supply the transportation network in an effective and efficient way through innovation and technology.

Learning Outcomes

- 1. Explain the importance of transportation through the years.
- 2. Examine the effects of transport on the environment.
- 3. Compare and contrast the different types of transportation means.
- 4. Identify the factors that effect and influence the transport of people.
- 5. Inspect how people's attitudes can impact the mobility pattern.

ETLGC-406-2011: GIS for Logistics

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

Geographical Information Systems (GIS) allow Businesses to store, manipulate, display, and analyze data which has been geographically catalogued and tagged which creates geospatial data.

Visualizing data patterns on Maps to display and depict trends and data is what the main Learning Outcome of the course. The various tools, software, and concepts are learned and practiced to realize this Focal Outcome.

This allows different entities to relay information to one another through integrated data such as latitude and longitude, compass location, location in proximity to other known locations, and Global Positioning Systems to interact with these tagged locations. Data sets such as address, zip code, city, etc. provide connection to GIS/Geo Spatial data.

The learner must develop skills around basic spatial data concepts, interacting with maps, and interacting with data. The Learner should then learn how to interact with data through map layers, exploring online resources, and ultimately creating spatial relationships thourhg raster, vector data that provides a tangible mapping outcome.

Ideally the learner then works to take raster and vector data and run it through open source software like ArcGIS and/or QGIS.

The Learner must also be introduced to software that tracks satellite imagery, digital map technology, Imagery Analysis, Model Building, Spatial visualization using Specific GIS software, and other pertinent technological tools.

Finally the Learner must learn about how GIS can be, and is used, within the Logistics/ Transportation industry. Topics include Transportation Planning, Operations, Asset Management, and port/airport management

The Learner in tandem with Lecturer should then decide on a GIS Project focused within the Logistics/Transportation sector and agree what Data Visualizations are required, Discrete and Continuous Data sets and values, the source, and the deliverable. ArcGIS Deskptop is preferred; GIS APIs could be used in place of QGIS but preferably they are used in tandem.

Once the Learner has proven understanding of Raster and basic GIS/Geospatial data understanding a Project should be identified to then build upon system and plot.

Running Raster Statistics QGIS followed by Vector Data reading in both systems and basic visualization creation with Shapefiles would follow.

A final Assignment or Assessment should be agreed with the Learner and Lecturer that is pertinent or relevant to MCAST or Malta / EU. An example might be the amount of traffic that passes MCAST in Paola each day over a period of a year, or visualizing main Intermodal Hubs and the amount of containers that pass through each week/month/year etc.

Learning Outcomes

- 1. Identify fundamental key elements within Geographic Information Systems (GIS) using ArcGIS to interact with maps and data.
- 2. Assess spatial relationships between attribute data and location through data display and presentation.
- 3. Demonstrate an ability to create and edit data through geocoding.
- 4. Analyze Geospatial Data through vectors, rasters, and the creation of data subsets.
- 5. Apply Models and Modelling Terrain Mapping and Analysis, Spatial Interpolation, Dynamic Segmentation.
- 6. Apply ArcGIS to Logistics / Transportation.

ETLGC-406-2012: Transportation and Logistics Project

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit will guide students towards the successful completion of a Project within the Transportation and Logistics Industries. The aim is to introduce learners to research and develop their understanding and skills in both quantitative and qualitative research methods as well as report creation and presentation of findings.

Learners will be introduced to the research process and apply different methodologies, data collecting tools and conceptual frameworks. Learners should first be introduced to the DMAIC framework to Define, Measure, Analyze, and depending on the outcome of the intended Project, Improve and Control. Prior to moving past each stage, the Lecturer should assess and approve; so, the define phase of the Project should be solidified and agreed before moving to the Measure phase of the Project.

The ultimate delivery of this Unit should be a Transport and Logistics delivered Project. In this study-unit, learners will cover different types of research design including experimental, descriptive, and observational designed. Qualitative data collection designs to be introduced include archival studies, interviews, and case studies. The methodological applications of these methods, including the design of appropriate research questions, will also be covered. The syllabus also covers the challenges of various data collection techniques as well as the measurement issues of questionnaire development, reliability and validity of data, issues of sampling and of sampling size. Following completion of this unit, learners should be familiar with all parts of the research process including funding application, ethics and publication. Tools will be provided for the learner to individually formulate a research question and to write a sound research proposal.

- 1. Develop and submit a Transport and Logistics project proposal.
- 2. Use research and evaluation skills to organise and produce Transport and Logistics project plan.
- 3. Produce the major project according to chosen specialised areas in Transport and Logistics.
- 4. Present a complete Transport and Logistics project as an evaluative and reflective experience of developed work.

ETLGC-406-2013: Costing for Logistics

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

Although inventory is essential for most of the logistics companies, this comes at a cost and this issue will be discussed in depth during this unit. Complementing this unit, the costs related to owning a warehouse will also be deliberated. Does the warehouse's location impact the logistics costs? Do the number of warehouses affect the transportation costs? These important decisions that logisticians face, and more, will be debated within this unit along with the principles of logistics costings.

Costings also impact the mode of transport selection in the logistics industry. Hence, firstly, the learner will briefly be introduced to the characteristics of the different types of transport modes, from their costs and expenses point of view. Subsequently, the selection method will be discussed giving prominence to the operational factors of each mode along with their cost and service necessities.

The next part of this unit will then shift its focus on the use of accounting within the logistics industry. To begin with, the learner will be introduced to the role and purpose of management accounting. Furthermore, this unit will go into the valuation and rotation of the inventory. This will include the use of FIFO and AVCO methods and examine why different valuating methods give different calculations. Additionally, this unit will cover marginal costings in which different type of costings will be delved into.

Subsequently, this unit will introduce the development of transportation quotes with the main focus being road (local and international), air and sea transportation. Complimenting this topic, the importance of quoting to the buyers will be discussed while the learner will also get the opportunity to experience a real-life example on how couriers and agencies issue the quotes to their clients. This topic will then be supported by price calculation which gives the learner a thorough understanding of price determination, which will include the calculation of the mark-up and margin for service provision.

The final section of this unit will give the opportunity to the learner to understand the process and preparation of budgeting along with the process and functions of budgets and their role in business planning. This unit will also cover the functional budgets for inventories; production; sales and purchase and debtors and creditors.

- 1. Recognise the importance of the location of the logistics companies' resources in relation to the logistics costs.
- 2. Understand the different types of costs incurred in transport and logistics operations.
- 3. Apply the basic accounting tools used in the logistics and transportation industry.
- 4. Compute service pricing and quotations for transport or logistics service provision.
- 5. Calculate functional budgets for various aspects within the supply chain.

ETSEA-406-2000: Principles of Marine Transportation

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit will expose Learners to the principles of Marine Transportation within the Global Logistics Industry. It will specifically explore the fundamental industry dynamics around maritime global trade which drives more than 85%+ of global trade.

Annually vessels move more than 10 billion tonnes of containers, solid, and liquid bulk. Marine transportation is the most effective and efficient way to move goods and economy is interdependent on transportation Networks; the importance of Marine transportation is then paramount.

This unit will start by outlining basic history of marine transportation and its role within global supply chain and economics. It will then lead into port logistics as well as the importance of dry ports and the connection to traditional seaports.

The unit will then go into liner shipping, containerisation and its effect on supply chains. It will then discuss intermodal operations and transport hubs and how they connect to seaports and shipping. It will then lead into tanker trade and logistics, transport networks, and shipping management.

Finally, students will learn about the dry bulk trade, tramping, and terminal facilities and operations and will be guided on hinterland logistics, port authority and port management.

Learning Outcomes

- 1. Present port-centric logistics and supply chain integration.
- 2. Demonstrate container transportation logistics with tanker operations.
- 3. Assess dry bulk operations, intermodal and hub transportation, and intermodal. terminal facilities
- 4. Describe dry bulk trade, terminal facilities, and operations/hinterland logistics, port authority and port management.

ETSEA-406-2001: Maritime Law

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

The aim of this course is to familiarise the learner with the main principles of carriage of goods legislation, and to specifically tailor that knowledge to a logistics environment.

The learner will be required to gain knowledge of the principles underpinning a carriage of goods contract, including bills of lading and charterparties, as well as the main obligations of all parties to such contracts and the main conventions relating to such agreements. Underlying arrangements, consisting of international trade agreements and dispute settlements also form part of the curriculum as part of an integrated understanding of the logistics surrounding the sale and delivery of goods. The learner will also be required to learn the most common of the INCOTERMS being currently used.

Learning Outcomes

- 1. Apply the main terminology used in a contract of affreightment.
- 2. Distinguish between charterparties and bills of lading and the different obligations underpinning each.
- 3. Apply the essential elements of an international sale agreement, including the most commonly used INCOTERMS.
- 4. Outline and compare the salient features of the main types of dispute resolution mechanisms (mediation, arbitration, litigation).
- 5. Identify the main documents underpinning a carriage of goods agreement, the parties thereto while outlining the essential obligations of the parties.

ETLND-406-2000: Fleet Operations

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit will expose the student to the basic principles of goods vehicle operator's licensing which are necessary to support the professional running of a road haulage operation. The unit will specifically delve into the EU rules applicable to road haulage including the goods vehicle drivers' hours, working time and tachograph use equipment.

The unit will define the types of goods vehicles used in road haulage operations. This will include detail of the goods vehicle dimension and weight, construction and use, lighting, marking and plating.

Another area of relevance to this unit would be the practices adopted for vehicle maintenance and maintenance records. The unit will provide an overview of the conditions of carriage and security of goods and the relevant road traffic regulations.

The final part of the unit is aimed to give the learner a solid understanding of the importance of safety in loading different loads on vehicles. This unit would also prepare the learner to appraise the financial aspects and use of IT systems in fleet operations, the environmental responsibility a fleet operator has in the efficient running of the operation.

Learning Outcomes

- 1. Recognise the basic principles of goods vehicle operator's licensing and professional competence.
- 2. Define goods vehicles construction and use that support their operations.
- 3. Outline how goods vehicle fleet operations and maintenance would be in line with regulations.
- 4. Understand the safety requirements in loading and working with goods vehicles.
- 5. Appraise economic and environment responsibility in road fleet operations.

ETLND-406-2001: Intermodal Freight Operations

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit aims at providing knowledge and application on the topic of intermodal freight operations and its connection to the wider field of freight transport. As intermodal freight transport involves multiple modes of transportation without physically handling the freight at the unit load level, the course will focus on how freight integrates within logistics networks with a concentration on real operational attributes. This course will also provide the student with tools for analysing some of the issues and challenges found within intermodal transport systems.

The course will start off identifying the origins of intermodal transport, discuss policy and planning related to its mechanism. The course will then look at the basic loading units, handling equipment, and vessels such as trains, merchant vessels, and trucking.

Following this the course will focus on Rail operations, inland waterway operations, and road distribution from intermodal perspective. The unit will then concentrate on Intermodal terminal design and operations, water port interface, and container flow.

Finally, the unit will explore the system management and economics of intermodal systems, intermodal logistics, modelling of intermodal systems, and environmental aspects regarding these systems.

Learning Outcomes

- 1. Demonstrate the origins of intermodal transport, policy and planning, and relevant equipment and vessels.
- 2. Implement solutions of rail, inland waterway, and road distribution within intermodal systems.
- 3. Analyze intermodal system management, economics, and intermodal modelling.
- 4. Link intermodal systems to logistics and how supply chains are modified to suit intermodal transport.
- 5. Model intermodal systems and environmental aspects of Intermodal Transport.

ETAVN-406-1509: Cargo Operations

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

In this unit the learners will be able to become familiar with the requirements and responsibilities of the shipper. As well as know the importance of airfreight in today's dynamic world and understand the role and responsibilities of the freight forwarder.

Learners will gain knowledge about the different operational procedures and processes that airlines and cargo handling companies adopt during acceptance and releasing of goods as well as understanding the handling procedures for different types of cargo.

Moreover, in this unit learners will become familiar with other entities like Customs and AVSEC (SECURITY), which are also involved in the import and export activities related to airfreight. Finally, learners will understand what dangerous goods are and how these can be shipped as airfreight.

Learning Outcomes

- 1. Determine the responsibilities of the shipper and the role of freight forwarder in aircraft cargo operations.
- 2. Explain the different procedures and processes related to import and export of goods by air.
- 3. State the role of other entities in ensuring a smooth operation like Customs and Security.
- 4. Describe the different handling procedures used for different types of cargo.
- 5. Apply the correct processes and procedures to handle freights with dangerous goods.

ETAIR-406-2000: Logistics for aircraft maintenance

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit provides information for the logistics procedures and models involed in the supply chain for aircraft maintenance. Transportation solutions that should be designed according to the level of urgency encountered. Operational maintenance has increased and with it the need to reduce expenses and improve the supply chain.

Learning Outcomes

- 1. Identify the importance of having a robust supply chain.
- 2. Inspect how aircraft maintenance can impact the Airline Operation and Safety.
- 3. Compare and contrast proactive and reactive maintenance.
- 4. Explain the future of logistics and aircraft maintenance.
- 5. Examine the role of technology in the supply chain, logistics and maintenance of Aircrafts.

CDKSK-406-2001: English

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

The main objective of this unit is to prepare students to use the English language to understand, analyse, organise and communicate specific technical knowledge by inferring meaning from, and using, embedded information, being able to evaluate information critically and communicate through different types of texts, as required by various but often specific technical contexts within the selected field of study.

The emphasis is on the processes needed to transition from use of the English language in General Education to that required for access to Higher Education.

In particular, L4 Key Skills English is targeted at learners who have completed Foundation College programmes (Levels 1 to 3) and seek to further their studies at Technical or Degree level.

In this respect, this unit recognises the necessity to meet two linguistic demands at this threshold level; strengthening students' linguistic competences to be able to communicate more specifically within their vocational area and stream and to prepare them for more rigorous academic thinking, research and writing as necessitated by degree courses.

Being introduced at this level are core and elective unit outcomes. <u>Reading and writing outcomes are core components</u> in this syllabus while <u>listening and speaking are elective components</u>. Every L4 programme must deliver the <u>two</u> core outcomes and any <u>one</u> of the two elective learning outcomes. The elective criteria to be assessed cannot be selected from and across both outcomes.

- 1. Read technical texts effectively to improve knowledge of the subject area;
- 2. Understand information presented orally in the form of recordings, or talks, discussions, seminars, interviews or presentations;
- 3. Demonstrate own understanding of the subject matter via oral presentation, mock interviews or similar oral delivery;
- 4. Write a research paper or technical report demonstrating cohesion, structure and appropriate style.

CDKSK-406-2007: Mathematics

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit provides a framework for students to develop mathematical thinking skills further to the level 3 unit specification to solve problems related to real-life situations. Students also develop skills, attributes and knowledge that contribute to their personal growth and effectiveness within their training and work environment and also within the community.

The unit is designed to adapt for the needs of a particular field of study (business & finance or engineering & transport and others).

To reach this goal the unit was divided into four learning outcomes which are related to statistics, graphical representation, game theory and finance. Through these different areas students will be able to develop the effective skills for information processing, reasoning, evaluation creative thinking and enquiry, all fundamental skills for the problem solving process. This will prepare students in applying and evaluating a range of strategies to solve real-life problems. This is in fact shown throughout the unit content where the first two learning outcomes and the last two learning outcomes combine together to use all the knowledge, understanding applications and analysis learned throughout each learning outcome to synthesis and evaluate a real-life context. Through this unit the learner will also learn to present and communicate results and conclusions effectively.

On successful completion of the unit the learner will be equipped with mathematical thinking skills which make them aware of and understand their thought process, to reassess and identify areas for development. Students learn to evaluate, reflect about their strategies, understand and verify results to solve problems. These skills will equip students with managerial skills, to further their studies and for work employability.

- 1. Demonstrate visual and logical techniques in evaluating graphical representations and communication skills in presenting the results effectively;
- 2. Apply information processing skills to solve problems in a relevant statistical context;
- 3. Demonstrate evaluation and communication skills in solving and presenting problems applied to costing methods and techniques;
- 4. Apply creative thinking skills and demonstrate evaluation skills to solve problems in a relevant (game theory) context.

CDKSK-406-2109: Information Technology

Unit Level (MQF/EQF): 4 Credits: 6 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 150

Unit Description

This unit aims to impart to the learners the necessary skills to produce, report, and analyse their work in a digital environment. Based on five learning outcomes which when combined give the learners the possibility to create advanced reports, represent data visually, understand the target audience and prepare outstanding presentations as well as manipulate images. Finally, the unit shows the learners how to keep the files generated safe from various mishaps.

At this level, most of the reports being prepared by the learners will require a certain level of detail, possibly producing reports which contain a substantial number of pages. This unit will show the learners how to master such large documents. Some information is better represented in a visual form. Using spreadsheet software, this unit will demonstrate to the learners how to create advanced charts, create what-if scenarios as well as how to analyse and validate the data being inputted. Building upon previous learning, this unit demonstrates how to create presentations, which are adequate for the audience and the venue. Moreover, the presentations will be enriched with multimedia content to enrich the experience of the audience.

Throughout the unit, the learners will be making use of images. Hence image manipulation skills will also be conveyed during the delivery of the unit. This ensures that the images being used are adequate for the task and represent the message that the learner needs to convey.

With each unique file being created representing tens of hours of work, it is imperative that files are backed up properly. The final part of this unit deals with the various forms of data replication and will provide the learners with the possibility of implementing and testing their own backup strategy that fits their needs.

On completion of this unit learners should be able to:

- 1. Use a word processing application to manage complex documents.
- 2. Present data visually and produce advanced outputs using a spreadsheet application.
- 3. Use a presentation application to produce multimedia centric outputs.
- 4. Use an image editing application to manipulate images.
- 5. Analyse and implement a data replication strategy.

CDKSK-404-1915: Employability and Entrepreneurial Skills

Unit Level (MQF/EQF): 4 Credits: 4 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 100

Unit Description

This unit complements the vocational and key skill units at Level 4 and provides an opportunity for learners to enhance their employability and entrepreneurial skills.

Quite often, learners tend to focus most on technical skills and competences required in a certain trade which enable them to access employment. On the other hand, employers expect employees to be appropriately skilled to follow instructions, take initiative, work effectively in a team, take a lead when necessary and more. In view of this the unit starts with an introduction to the 4th industrial revolution and proceeds to the transversal skills necessary to find employment, retain employment and advance at the place of work. Learners will be able to highlight their strengths and identify the areas that require improvement.

The rest of the unit focuses on entrepreneurial skills, a skill which is one of the most important transversal skills identified by UNESCO. Learners are introduced to methods which can be used to generate new and innovative business ideas and methods which help them evaluate ideas and choose the most feasible. Furthermore, learners will cover the various stages of product and/or service development, including market analysis, processes, pricing strategy, promotion and resources required.

Learners will work in a small team and by the end of the unit they will have the opportunity to develop a business idea which is commercially viable. Furthermore, they will present the idea to prospective investors/stakeholders.

Learning Outcomes

- 1. Understand the employability skills required for Industry 4.0.
- 2. Use idea generation techniques to come up with ideas and evaluate chosen ideas.
- 3. Understand the various stages of product and/or service development.
- 4. Work in a team to develop a business idea which is commercially viable.

CDKSK-402-2104: Community Social Responsibility

Unit Level (MQF/EQF): 4 Credits: 2 Delivery Mode: Fully Face-to-Face Learning Total Learning Hours: 50

Unit Description

This unit focuses on Community Social Responsibility and provides an opportunity for learners to better understand themselves and the others and to establish goals in life. Community social responsibility enables learners to understand their strengths and areas for improvement and prepares them for life, employment and to become active citizens in society.

Moving away from traditional delivery of other units, learners will be empowered to take ownership of their learning process. Hence, community social responsibility will be delivered through a combination of workshops, small-group sessions with mentors and various opportunities to reflect.

The set of sessions will tackle community social responsibility skills and will mostly focus on the self, the ability to work independently and important values in life. The second set of sessions will address interpersonal skills and will focus on working with others, dealing with diversity and conflicts. Furthermore, at the end of the sessions, the learners will be introduced to the importance of active citizenship in life.

Learning Outcomes

- 1. Identify personal goals through self-reflection.
- 2. Evaluate how collaboration with others can be more effective.
- 3. Explain the importance of giving and receiving feedback.
- 4. Contribute actively to make a difference in society.