



# MCAST

MQF Level 5

AE5-14-23

## **Higher Diploma in Transportation and Logistics Management**

**Course Specification**

## **Course Description**

The course is intended for candidates who wish to embark or progress on a career in the transportation and logistics management.

The Students after this course will acquire the relevant advanced academic and vocational logistics operations principles and skills. This would be enhanced by an understanding of how transportation modes support the smooth flow of goods between entities operating within global supply chains.

Finally, the learners will also be properly equipped to succeed in the numerous dynamic challenges in local and global industries.

## **Programme Learning Outcomes**

At the end of the programme the learner is able to:

- 1. Develop the necessary knowledge and skills to become technically competent and adaptable in the Transportation and Logistics discipline whilst embracing new technological advancement and challenges.*
- 2. Develop social skills, leadership qualities and willingness to be responsible towards developing the community and the economy.*
- 3. Solve and manage logistical challenges innovatively, creatively and ethically.*
- 4. Recognise the need of a lifelong learning philosophy for successful career advancement.*

## **Entry Requirements**

Any MCAST MQF Level 4 Advanced Diploma

OR

2 A-Level passes and 2 I-Level 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	90-120	Less than 30
	Post-Graduate Diploma	60	
	Post-Graduate Certificate	30	
Level 6	Bachelor <sup>23</sup> /Bachelor (Hons.) <sup>24</sup> First Cycle Bologna Process	180-240	Less than 180
Level 5	Short Cycle Qualification	120	Less than 60
	Undergraduate Higher Diploma	90	
	Undergraduate Diploma	60	
	Undergraduate Certificate	30	
	VET Level 5 Programme <sup>25</sup>	60-120	
Level 4	Pre-Tertiary Certificate	30	Less than 120
	VET Level 4 Programme <sup>26</sup>	120	
	MATSEC Certificate	NA	
Level 3	VET Level 3 Programme <sup>27</sup>	60	Less than 60
	General and Subject Certificate	NA	
Level 2	VET Level 2 Programme <sup>28</sup>	60	Less than 60
	General and Subject Certificate	NA	
Level 1	VET Level 1 Programme <sup>29</sup>	40	Less than 40
	General and Subject Certificate	NA	
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, 4<sup>th</sup> Edition*. NCFHE.

Total number of Hours: 3000

Mode of attendance: Fulltime

Duration: 2 Years

Target audience for MCAST full-time courses is 16 to 30

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 Ghonoq Targa Gap,

Mosta

**Institute of Applied Sciences,**

**Centre of Agriculture, Aquatics and Animal Sciences,**

Luqa Road, Qormi

**Gozo Campus**

J.F. De Chambray Street

MCAST, Ġhajnsielem

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 <https://www.mcast.edu.mt/college-documents/>

The Programme Regulations referenced below apply. (DOC 005 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 005 available at: link <https://www.mcast.edu.mt/college-documents/>

### 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/>

### Course Fees

MCAST courses 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 <https://www.mcast.edu.mt/fee-payments-for-non-eu-candidates/>.

### 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 through 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 join 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 <https://www.mcast.edu.mt/online-applications-2/>

Contact details for requesting further information about future learning opportunities:

### MCAST Career Guidance

Tel: 2398 7135/6

Email: [career.guidance@mcast.edu.mt](mailto:career.guidance@mcast.edu.mt)



## Current Approved Programme Structure

Unit Code	Unit Title	ECTS	Year
ETTLM-506-2201	Strategic Procurement Principles	6	1
ETTLM-506-2202	Transportation Economics	6	1
ETTLM-506-2203	Advanced Logistics and Supply Chain Management	6	1
ETTLM-506-2204	Warehouse Management	6	1
ETTLM-506-2205	Transportation Simulation Modelling	6	1
ETTLM-506-2206	Dangerous/Special Goods Classification and Requirements	6	1
ETTLM-506-2207	Supply Chain Project Management	6	1
CDKSK-506-2013	Information Technology	6	1
ETTLM-506-2208	Accounting and Finance for Logistics	6	1
ETTLM-506-2209	GIS for Logistics	6	1
ETTLM-506-2210	International Business	6	2
CDKSK-503-1905	Critical Thinking 1	3	2
ETTLM-506-2211	Transport Planning	6	2
ETTLM-506-2212	Advanced Marine Transportation	6	2
ETTLM-506-2213	International Maritime Law	6	2
ETTLM-506-2214	Road/Rail Freight Transport and regulatory framework	6	2
ETTLM-506-2215	Fleet Management	6	2
ETTLM-506-2216	Advanced Air Transport Industry	6	2
ETTLM-506-2217	Regulatory Policy and Air Law	6	2
CDKSK-503-1906	Critical Thinking 2	3	2
ETTLM-506-2218	Transportation Project	6	2
<b>Total ECTS</b>		<b>120</b>	<b>/</b>

## ETTLM-506-2201: Strategic Procurement Principles

Unit level (MQF/EQF): 5  
Credits: 6  
Delivery Mode: Blended  
Total Learning Hours: 150

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### Unit Description

This course focuses on Risk Management with regards to procurement, suppliers, and how to mitigate those risks through various methods of negotiation, strategy, and portfolio management.

Following a brief recap of Purchasing Organizational Structure and Global Sourcing, the learner will delve right into Risk management and learn about The Risk Management Process, ways to safeguard a company against Supplier Risks, and how to mitigate risks once they present themselves into the Supply Chain.

Next, the learner will focus on methods and tools for everyday purchasing including Market research, Value Analysis, ABC Analysis, Portfolio Technique, and Price Structure Analysis.

The Learner will then focus on the Negotiation that includes preparation, the stages and methods of Negotiation, and evaluating success or failure of a negotiation. Here, Karass Negotiation will certainly supplement, as it is one of the leading methods for professionals within sales and business in general.

Finally the learner will focus on Personnel Development within purchasing and e Procurement, topics include the requirements for the Modern Buyer, Purchasing as a Managerial function, and the basics of e-procurement and e-ordering.

### Learning Outcomes

On completion of this unit the learner will be able to

1. *Discuss Risk Management and safeguarding against risk.*
2. *Apply learned methods and tools for everyday Strategic Purchasing Management.*
3. *Exhibit the various methods of negotiation and relevant stages and preparations required to be successful.*
4. *Engage in requirements for the Modern Buyer and Modern Purchasing Manager.*

## **ETTLM-506-2202: Transportation Economics**

Unit level (MQF/EQF): 5  
Credits: 6  
Delivery Mode: Blended  
Total Learning Hours: 150

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### **Unit Description**

Public Transport is a collection of various modes of transportation accessible to the general public, usually on routes via air, sea, ground, and rail, including trams, bus rapid transport, light rapid transport, and High Speed Rail. A unique aspect of Public Transport is the integration of Policymaking from Government, implementation from Private business, and fleet management through private and sometimes Government. New forms of ride sharing like Uber, Bolt, Lyft and others, are helping to shape new policy, routes and ways for the public to transport goods and people from origin to destination.

The learner will begin this unit learning about regulatory frameworks in public transport and transport governance followed by mobility as a Service (MaaS) as well as intercity modal competition, where essentially various modes of transport are in direct competition to gain more passengers and goods. Following this, the learner will understand Public transport integration, intermodal connections and public transport concerning the environment.

The learner will then engage in Land Value gains and financing of public transport infrastructure, evaluation of Public Transport and Public transport productivity and efficiency assessment. The learner will also be exposed to each mode beginning with bus, rail, air passenger services, sustainable urban ferry services and taxis.

The learner will then discover insights into health impacts of public transport, demand estimation for network planning, first and last mile connection, public transport and the built environment and intelligent mobility and big data for planning, trust and privacy. Focus will then be placed on public transport delivery issues including provision of service information, social inclusion, intermodal strategies combining cycling and public transport to improve service and acceptability and general network planning and design.

Smart card data will engage the learner into the various uses, analytics, and platforms and how they are being used today to improve efficiency within the transport networks. Finally, the learner will encounter the future of public transport through learning how automated vehicles of present and future will change the economics around transport.

## Learning Outcomes

On completion of this unit the learner will be able to

1. *Apply public transport governance, transport integration and public transport financing and evaluation to real world examples.*
2. *Advise the various modes of transport involved in demand estimation of public transport and network planning including first/last mile, trip and mobility.*
3. *Engage different public transport delivery issues and solutions to the issues.*
4. *Advise how smart cards and public transport planning can create optimization within the various public transport networks.*
5. *Provide knowledge and examples of future trends in Public Transport regarding vehicles, technology, governance and future mobility.*

## **ETTLM-506-2203: Advanced Logistics and Supply Chain Management**

Unit level (MQF/EQF): 5  
Credits: 6  
Delivery Mode: Blended  
Total Learning Hours: 150

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### **Unit Description**

This unit is made up of fundamental and advanced concepts of logistics and supply chain networks that operate around the globe. The learner will be equipped with the rudiments of this crucial methodological and often complex network of logistical trade, movements, returns, reversals, and embargos. The evolutionary speed of I.T and complexities of logistics and customer requirements will be addressed in this unit to help in steering the learner towards the ambience of customer service, speed, shipping, aviation, and haulage coordination to deliver the optimum including the impacts that these may have on the systems and sub systems in modern marketing mechanisms.

This unit also provides an important aspect in advanced logistics and supply chain flows for the learner to attain, i.e., the international blend of physical distributions, trade agreements, backward and forward business, and the different aspects of external factors that affects the transportation of logistics in each node and the influences on the modus operandi of a network set of activities.

These scenarios will provide the learner enough knowledge that will increase his/her the ability to evaluate and analyze different trade agreements of different continents on the movement of primary, secondary, and tertiary activities. The learner will also benefit from a cogitation aspect in the sense that enough knowledge on decision making of practical scenarios will help in the rational decision making with a special emphasis on environmental, sustainability and customer care issues that this complex system requires.

## Learning Outcomes

On completion of this unit the learner will be able to

1. *Evaluate seminal and contemporary supply chain distribution networks including returns and reversal logistics.*
2. *Analyse the transportation systems that exist used by distribution channels.*
3. *Discuss the impacts of world/regional distributions disruptions from conflicts to pandemics and the challenges they offer now and in the future.*
4. *Apply logistical issues in various supply chain contexts.*

## ETTLM-506-2204: Warehouse Management

Unit level (MQF/EQF): 5  
Credits: 6  
Delivery Mode: Blended  
Total Learning Hours: 150

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### Unit Description

This unit is designed to expand in this level on warehouse management that is a crucial element in logistics and supply chain modus operandi. The learner will acquire knowledge not only on storage equipment and handling environments, but also in managing, designing, and planning in contingency in the event of any type of disruption. The most common handling equipment is related of palletized and palletized cargo manually and automated systems with modern plant machinery. This unit will equip the student in utilizing the proper concepts in the day to day running of warehousing and storage management.

Another important aspect of this unit for the learner to understand the flow of movement in hubs and sub hubs and the security systems they entail in preserving the cargo allocation in an efficient replacement flow system.

### Learning Outcomes

On completion of this unit the learner will be able to

1. *Apply basic concepts and principles of warehousing and storage that supports logistics and supply chain operations.*
2. *Discuss the planning and design of a storage and handling system/s for efficient warehouse management.*
3. *Apply contemporary contingency measure in the event of a regional/continental/global disruption of warehouse operations.*
4. *Describe warehouse management and information systems that ameliorate efficiency.*

## ETTLM-506-2205: Transportation Simulation Modelling

Unit level (MQF/EQF): 5  
Credits: 6  
Delivery Mode: Blended  
Total Learning Hours: 150

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### Unit Description

The unit Transportation Simulation Modelling will steer the learner into the complexities of transportation with the technology compliment that global competition aggressively requires. Simulation Modelling has become a crucial element in contemporary supply chains and is responsible for the evolutionary changes that brought in the cyber era. This unit spans on all the components that make up a supply chain today varying from planning and design, environment, congestive bottlenecks, network routing, performance, and optimization. Modelling and simulation is the most economical way of keeping abreast with market and consumer mechanisms by continuous research on what demands and supply are in the present, with a probabilistic research of the future may hold.

### Learning Outcomes

On completion of this unit the learner will be able to

1. *Review seminal and contemporary transportation history, classification, and research analyses on the evolution of the system.*
2. *Analyse the traffic flow theory to identified different nodes in transportation networks.*
3. *Analyse the control techniques of land, sea, and air transport systems including public transport systems.*
4. *Assess the impacts on transport systems and society in general including the relationship between logistics and transportation.*



## **ETTLM-506-2206: Dangerous/Special Goods Classification and Requirements**

Unit level (MQF/EQF): 5  
Credits: 6  
Delivery Mode: Blended  
Total Learning Hours: 150

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### **Unit Description**

This unit introduces learners to the important aspect of handling, transportation and storage of dangerous goods in transport and logistics operations. The learners will be introduced to the different categories, legislation and regulations of dangerous goods in relation to transport and logistics operations and logistics.

This unit will introduce learners to the different modes of transport of dangerous goods in transport and logistics. Learners will also be taught about the importance of safe storage and handling of dangerous goods relating to transport and logistics operations.

### **Learning Outcomes**

On completion of this unit the learner will be able to

- 1. Categorize different types of dangerous goods in transport and logistics operations.*
- 2. Discuss the legislation and regulations relating to dangerous goods in transport and logistics operations.*
- 3. Identify different modes of transport of dangerous goods in transport and logistics operations.*
- 4. Recognise the importance of safe storage and handling of dangerous goods in transport and logistics operations.*

## **ETTLM-506-2207: Supply Chain Project Management**

Unit level (MQF/EQF): 5  
Credits: 6  
Delivery Mode: Blended  
Total Learning Hours: 150

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### **Unit Description**

Supply Chain Management continues to grow within an interconnected and globalized world. Shocks, like pandemics and war, cause supply chains to experience rises in costs, drops in availability and demand, and an ever-increasing need to grow, adapt, and stay in front of global challenges. In order to grow a scale a supply chain without causing shocks to suppliers and customers it is essential to incorporate a standardized process of project management.

This unit will guide learners towards the successful completion of a Project within Supply Chain Management. Supply Chain and Project Management are required for modern managers to develop and accomplish supply chain strategies that are sustainable and cost effective. Utilizing the principal source of knowledge regarding project management is the Project Management Institute and with it the Guide to the Project Management body of Knowledge known as PMBOK GUIDE. 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 also be introduced to the PMI process of Project Management that includes Project Integration Management, Scope, Rime, cost and Quality Management mixed with HR, Communications, Risk, and Procurement Management. Learners will start with definition and drivers of supply chain management and proceed to learn about the five critical Supply chain management tasks - Foundation for SCM Knowledge. Following this, the learner will engage in Project Management, where the levels of project management maturity will be discussed along with project management standards, knowledge areas, and process standards. After this, the learner will be exposed to Supply chain executing processes, how to develop a supply chain strategy, implementing collaborative relationships, forging supply chain partnerships, and improving supply chain processes and systems.

## Learning Outcomes

On completion of this unit the learner will be able to

1. *Execute Supply Chain Management Foundational Concepts.*
2. *Establish the Project Management and Supply Chain Management Link.*
3. *Develop Supply Chain Management Project Processes.*
4. *Apply Project Management and Supply Chain Management to a Supply Chain Project.*

## CDKSK-506-2013: Information Technology

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### Unit Description

The unit aims to give the student advanced IT skills and the ability to use advanced IT tools in their day-to-day work, to analyse information and leverage other skills in real life and real work environments.

The unit builds on the IT Key Skills level 4 Unit and basic IT knowledge. Most of the outcomes within this unit require basic understanding of IT and it is highly recommended that students are already practiced in IT. Furthermore, the outcomes within this unit can be used to support each other.

On successful completion of the unit students will possess skills to keep learning more IT skills online in order to achieve their work related goals. They will also be able to use IT for a variety of advanced work related tasks.

Amongst the outcomes of this unit, the student will be able to use tools and online sources to accomplish tasks that require collaboration between people. Examples of such tasks include learning through the use of a Virtual Learning Environment; uploading and/or sharing of material produced, such as screenshots or screencasts. The student will also be able to participate in online discussions.

The student will also be able to use a tool of choice to be able to store data using some form of database. The student will later be able to retrieve that data later for manipulation and analysis.

The student will also be able to automate common and repetitive tasks using IT. This will be done through the use of a scripting language. For example, this scripting may be done through the use of macros or other scripting language related to the programs associated with the chosen task.

The last outcome will enable to student to create an online presence that enables the student to carry out some online activity with other people in an asynchronous manner. This may be achieved through the use of social media or online publishing platforms.

## **Learning Outcomes**

**On completion of this unit the learner will be able to**

- 1. Use IT tools for collaboration with others.*
- 2. Store, retrieve and manipulate data for analysis.*
- 3. Utilise IT tools and a scripting language to automate tasks.*
- 4. Create and maintain an interactive online presence by making use of one or more tools to host the student's work.*

## **ETTLM-506-2208: Accounting and Finance for Logistics**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

This unit introduces learners to accounting and finance for logistics. The learners will be introduced to management accounting and taught about the importance of distinguishing between different types of costs and cost behaviours, in relation to transport and logistics operations. This will help learners to recognize the importance of marginal costing and decision making in these operations. Learners will be introduced to the different types of budgets and variance analysis. This unit will help learners to understand the importance of the management of inventory in supply chain. Learners will be taught how to apply investment appraisal techniques to given scenarios relating to transport and logistics operations.

### **Learning Outcomes**

**On completion of this unit the learner will be able to**

- 1. Recognise the role and purpose of management accounting in transport and logistics operations.*
- 2. Interpret the different types of costs and cost behaviour in relation to transport and logistics operations.*
- 3. Recognise the importance of Marginal Costing and Decision Making in transport and logistics operations.*
- 4. Prepare different types of Budgets & Variance Analysis in relation to transport and logistics.*
- 5. Appraise the importance of the management of inventory in supply chain.*
- 6. Apply Investment Appraisal techniques in transport and logistics operations.*

## **ETTLM-506-2209: GIS for Logistics**

Unit level (MQF/EQF): 5

Credits: 6

Delivery Mode: Face to Face

Total Learning Hours: 150

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### **Unit Description**

Transportation is, generally surmised, as the movement of goods from one place to another. As technology advances, there are dramatic improvements to speed and capacity of transport that dramatically increase economics at origin, intermodal locations, and destination. This brings about population shifts and subsequent requirements for infrastructures of all kinds. The speed that the paradigm has shifted leaves global routes mixed between old ways of working, and new and improved ways; one can see this where there is a brand new airport terminal but bridges and tunnels leading to and from the same airport are in bad shape. This unit serves to give the learner a perspective on how organizations, agencies, and companies, like departments of transportation, airports and port authorities, to name a few, plan, manage, and maintain the infrastructure that keeps people and goods moving efficiently. Managing transportation systems means also managing good business and customer relationships; to be able to prepare for and respond to incidents like inclement weather at an airport, or a power outage that affects an entire intermodal terminal.

Since every aspect of a transportation system is locational, it can be mapped and analyzed spatially. Transportation agencies use geographic information system technology (GIS) to help improve operational efficiency, safety and security, asset management, planning and sustainability. GIS also provides a stronger sense of location intelligence across organizations so that transport managers, engineers, planners, repair crews, and more, can develop a better understanding of where people and things are in relation to everything else.

GIS reveals unseen issues, vulnerabilities, and movement patterns that can help optimize transport systems and networks.

The unit is broken down into four distinct parts: (1) The first portion is Operational efficiency, which GIS provides a collaborative environment where sharing and using data is presented in a locational intelligent view; (2) The second part is safety and security. Moving people, goods and services across the globe brings issues of fraud and

risk, which requires rules and regulations to combat. GIS is well suited for strengthening safety and security measures to reduce risk within a complex environment of moving parts because it can give personnel real-time situation awareness and ability to coordinate resources; (3) The third part is asset management. With GIS, transportation agencies can create a comprehensive asset inventory that includes the precise locations of all assets.

In this section, a collection of stories shows how transportation agencies are using GIS to help maintenance crews and asset inspectors capture detailed information that automatically updates asset management systems, as well as document work, prioritize work orders, re-task crews based on their locations and proximity to other issues and assets, and move from reactive to predictive maintenance; (4) The final part is Planning and Sustainability.

Transportation agencies are concerned with the long-term sustainability and resiliency of the infrastructure and always trying to anticipate growth in business and the changing needs of customers. With GIS, transportation agencies get a unique geographic perspective on understanding current conditions and existing stresses on transportation systems. In this section, a collection of stories shows how transportation agencies are using GIS to plan changes to the transportation system while better understanding the needs of customers, patterns of economic development, and meeting state and federal requirements.

## **Learning Outcomes**

**On completion of this unit the learner will be able to**

- 1. Apply operational efficiency across a transport system using GIS*
- 2. Utilize safety and security measures across a transport System using GIS*
- 3. Develop asset management across a transport system using GIS*
- 4. Employ planning and sustainability measures across a transport System using GIS*



## CDKSK-503-1905: Critical Thinking 1

Unit level (MQF/EQF): 5  
Credits: 3  
Delivery Mode: Face to Face  
Total Learning Hours: 75

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### Unit Description

Critical Thinking is the intellectual discipline of actively and skilfully conceptualising, applying, analysing, synthesising, and evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication as a guide to belief and action.

This unit equips learners with sought after skills essential to the vocational and academic life. Its main focus is on frameworks of reflective practice and ideology which are exemplified through the building of a critical readership by means of close-reading techniques and reflective writing. By integrating theories of reflective writing and the nature of evidence from sources of information, this unit equips learners with the means to read, interpret, reflect and write critically and reflectively.

The application of close-reading techniques and ideology is also addressed in this unit. Close-reading is the careful, critical analysis of a text that focuses on significant details or patterns in order to develop a deep, precise understanding of the text. Ideology is also addressed, with particular focus on areas of practical research that lie at the confluence of social, political, and technological concerns.

The final aim behind Critical Thinking I is to facilitate a deep, transformative, and unique learning experience.

### Learning Outcomes

On completion of this unit the learner will be able to

1. *Identify the different reflective frameworks that can be used to enable critical reflection and thinking.*
2. *Apply the appropriate methodology to write in an analytic reflective manner.*
3. *Apply close-reading techniques to secondary research.*
4. *Explain the importance of ideology in critical thinking.*

## CDKSK-503-1906: Critical Thinking 2

Unit level (MQF/EQF): 5  
Credits: 3  
Delivery Mode: Face to Face  
Total Learning Hours: 75

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### Unit Description

Critical Thinking is the intellectual discipline of actively and skilfully conceptualising, applying, analysing, synthesising, and evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication as a guide to belief and action.

This unit equips learners with sought after skills essential to the vocational and academic life. Its main focus is on demonstrating how concepts of validity, reliability and credibility of information are highly necessary when formulating objective, analytical arguments and reaching sound conclusions. Furthermore, individuals who can critically interpret information and evaluate its origin, inherent biases, fallacies and strengths are known to be more perceptive, responsive to illogical argument and can formulate arguments more effectively.

### Learning Outcomes

On completion of this unit the learner will be able to

1. *Determine the main features and components of explicit arguments.*
2. *Demonstrate effectively basic logical reasoning in a given task.*
3. *Consider common flaws in argumentation.*
4. *Construct objective, analytical arguments and conclusions for chosen issue.*

For further information, please contact us on [information@mcast.edu.mt](mailto:information@mcast.edu.mt)