MCAST

MQF/EQF Level 7

BC7-09-21

Master of Science in Lean Enterprise

Course Specification

Course Description

The Master of Science in Lean Enterprise includes lean problem-solving methodologies, demonstrates contemporary lean thinking principles, lean enterprise development and value stream mapping, including modern enterprise improvement techniques such as Six Sigma, theory of constraints and business process reengineering. It applies process analysis to business activities, methods improvement and work measurement to meet the competitive goals of a business environment. It evaluates the key characteristics of quality and the quality philosophy through established lean methods of quality improvement.

Programme Learning Outcomes

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

1. *Develop a broad analysis of the lean manufacturing philosophy and lean manufacturing techniques to implement them in a business context.*
2. *Apply lean/Six Sigma initiatives in both management and in manufacturing operations.*
3. *Examine factors that contribute to organisational waste.*
4. *Analyse different ways to eliminate waste.*
5. *Justify and implement improved organisational processes in order to make a positive impact to the company's effectiveness and efficiency.*

Entry Requirements

Relevant degree

MQF Level 5 qualification and adequate professional experience are also considered.

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[23]/Bachelor (Hons.)[24] 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[25]	60-120	
Level 4	Pre-Tertiary Certificate	30	Less than 120
	VET Level 4 Programme[26]	120	
	MATSEC Certificate	NA	
Level 3	VET Level 3 Programme[27]	60	Less than 60
	General and Subject Certificate	NA	
Level 2	VET Level 2 Programme[28]	60	Less than 60
	General and Subject Certificate	NA	
Level 1	VET Level 1 Programme[29]	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, 4th Edition*. NCFHE.

Total number of Hours: 2250 hours

Mode of attendance: Blended Learning

Duration: 3 Years

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

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 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 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 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 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 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

Current Approved Programme Structure

Unit Code	Unit Title	ECTS	Semester
CDLNE-706-1801	History and Principles of Lean	6	A
CDLNE-706-1802	Lean Tools	6	A
CDLNE-706-1803	Lean Production I	6	A
CDLNE-706-1804	Lean Administration	6	B
CDLNE-706-1805	Lean Leadership	6	B
CDLNE-706-1806	Six Sigma and Quality	6	A
CDLNE-706-1807	Lean Design and Innovation Management	6	A
CDLNE-706-1808	Lean Production II (Advanced Methods)	6	A
CDLNE-706-1809	Lean Start-up	6	B
CDLNE-706-1810	Change Management	6	B
CDDIS-730-1801	Dissertation	30	YEAR
Total ECTS		**90**	**/**

CDLNE-706-1801: History and Principles of Lean

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

Unit Description

Operations in the world's systems today are more complex and the science of management lags behind the rapid technological development that is taking place. Fierce competition at the international level requires sophisticated approaches to management. Lean is a new, proven business philosophy. Lean philosophy involves not just tools but also principles, rules and concepts. This unit evaluates various lean paradigms, lean principles, lean rules and value methodology.

Learning Outcomes

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

1. *Evaluate different management paradigms;*
2. *Justify lean paradigms, principles, pillars and methodologies;*
3. *Evaluate critically the Toyota Way Strategy;*
4. *Examine the value methodology as a function-based, systematic approach to improve a project, process, or product that can optimise costs while maintaining or improving performance;*
5. *Interpret the lean agile mind-set.*

CDLNE-706-1802: Lean Tools

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Blended Learning

Total Learning Hours: 150

Unit Description

The design and implementation of any concept of work organisation and management has its own tools. To date lean tools have been applied and confirmed in practice in leading global companies. In this unit, the most important lean tools that will be examined are: Kaizen, Value Stream Mapping, Workplace Organisation, Visual Management Techniques and One Piece Flow.

Learning Outcomes

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

1. *Defend the pull approach and the 5S tool methodology;*
2. *Evaluate the approach of the continuous search for small improvements;*
3. *Explain the cellular manufacturing approach and the just in time tool;*
4. *Assess the role of visual management techniques in different areas;*
5. *Analyse the mistake-proofing toolbox;*
6. *Estimate and judge the concept of Total Preventive Maintenance and the Standard Work approach.*

CDLNE-706-1803: Lean Production I

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

Unit Description

This unit will assess lean production principles to learners. Will use real case studies scenarios based studies, in order to examine elimination of waste and defining value from the customer's perspective. Demands for continuously improving operational performance requires systems that are fast, flexible, focused and friendly for their companies, customers and production associates. In this unit, learners will critically evaluate lean production, describing the background to its development and how evaluations and assessments of production systems are performed. Lean production tools will also be assed.

Learning Outcomes

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

1. *Assess the lean production principles;*
2. *Evaluate the current state of a given production system using lean tools;*
3. *Measure the importance of philosophy, strategy and cultural influence on the production system;*
4. *Defend the use of key performance Indicators for business;*
5. *Examine the appropriate usage of lean tools in order to create processes that work safely, reliably and well;*
6. *Justify the theory of constrains writhing a business environment;*
7. *Summarize the use of 6S and judge its sustainability throughout a workspace.*

CDLNE-706-1804: Lean Administration

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

Unit Description

Today, lean has become well established in areas other than production, such as service, healthcare and administration. However, there has been little literature written on lean administration. In order to use lean tools and approaches for implementation they must be tailored to specific administrative processes, which requires knowledge and experience to succeed.

Learning Outcomes

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

1. *Implement lean principles in office activities;*
2. *Estimate key performance indicators in lean administration;*
3. *Examine the use of Theory of Constrains while solving a problem;*
4. *Judge the given activities of an administrative process;*
5. *Apply the appropriate lean tools in order to improve office activities;*
6. *Defend the principles of team building.*

CDLNE-706-1805: Lean Leadership

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Blended Learning

Total Learning Hours: 150

Unit Description

A lean leader is someone who wants to create a learning culture across the entire organisation based on creating customer value at the lowest possible total cost. A lean leader should set time aside to recognise these differences and collaborate as a team to build a common understanding so that issues can surface and prevent team dissention later in the process. This unit enables development of a future state vision of your lean systems by using lean tools to eliminate the causes of waste and by identifying new ways to achieve continuous flow.

Learning Outcomes

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

1. *Appraise the history of leadership;*
2. *Analyse the principles of lean leadership and lean enterprise-system thinking;*
3. *Evaluate leadership terms, culture and policy deployment;*
4. *Defend the role of lean management in relation to Human Resources, risk taking, economics, and Key Performance Indicators;*
5. *Justify lean goals and their link to sustainable strategies;*
6. *Support and apply lean design thinking;*
7. *Interpret agile leadership.*

CDLNE-706-1806: Six Sigma and Quality

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

Unit Description

Lean Six Sigma is the synthesis of two effective approaches used in the productivity method. Six Sigma is a systematic, continuous and manageable project focusing on teamwork that targets the improvement of all kinds of existing and accessible data by using scientific approaches. Six Sigma tools can provide lean management the step of "perfection search" in the best way. This unit provides an analysis of the usage of the lean approach to lean method focuses on value and losses and Six Sigma's strong improvement tools.

Learning Outcomes

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

1. *Assess the fundamentals of Six Sigma;*
2. *Evaluate different sources of failure costs;*
3. *Implement statistical process control methodology and control charts;*
4. *Estimate and evaluate the process capability index;*
5. *Apply different tools of quality;*
6. *Discuss human resources and its application to Six Sigma;*
7. *Interpret Total Quality Management within a lean environment.*

CDLNE-706-1807: Lean Design and Innovation Management

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

Unit Description

Every business must innovate to survive, creating new products and services for new markets. Lean philosophy demands continuous improvement and learning in order to extend and increase the profitability of existing businesses and also to uncover options for future opportunities.

Learning Outcomes

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

1. *Defend the meaning, role and assessment of innovation;*
2. *Compare and contrast the Kaizen and Kaikaku tools in the innovation process;*
3. *Assess the level of innovation capability and risk assessment;*
4. *Argue the important role of stakeholder collaboration;*
5. *Interpret the important role of human resources for innovativeness;*
6. *Analyse the lean principles of project management;*
7. *Apply lean agile methods.*

CDLNE-706-1808: Lean Production II (Advanced Methods)

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

Unit Description

Complex production systems have degrees of variability, sensitivity and danger. Information flows and material flows are an essential part of them. The prevention of waste requires high skill, knowledge and precision. During this unit the learner will gain deeper support about lean production. Lean production tools and techniques, Kanban and Quick Changeover (SMED) will be assessed.

Learning Outcomes

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

1. *Examine various types of process mapping;*
2. *Evaluate quick changeover concepts and their liaison to the benefits of setup reduction time and lot sizes;*
3. *Measure diverse approaches for the prevention of waste;*
4. *Defend the Kanban System and its role in reducing setup time;*
5. *Appraise the importance of lean supply chain management;*
6. *Recognise the validity of the elements of standardised work.*

CDLNE-706-1809: Lean Start-up

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Blended Learning

Total Learning Hours: 150

Unit Description

Entrepreneurs are known for thinking outside of the box. Through start-ups they generate ideas for new business opportunities. Few of them, however, really evaluate the complexities associated with bringing a new idea to market. Through the process of developing a business plan, learners will have the opportunity to examine a wide range of issues that entrepreneurs face while seeking to capitalise on market opportunities. This course will cover the key elements of business plan development including customer and market assessments, analysis of customer development and business model development, as well as risk assessment and mitigation.

Learning Outcomes

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

1. *Evaluate the start-up concept and employ a feasibility and business plan template;*
2. *Assess and utilise lean start up tools;*
3. *Appraise the practice of the Minimum Viable Product approach;*
4. *Select types of start-up funding;*
5. *Defend start-up management and start-up analytics;*
6. *Interpret and apply lean start-up risk management.*

CDLNE-706-1810: Change Management

Unit Level (MQF/EQF): 7

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

Unit Description

Modern organisations have to react to changes in technology, the market arena and the environment while also changing themselves. Relevant to this transformation are such factors as: defining the situational problem that needs to be resolved, identifying how the actual work being performed can be improved, analysing and developing capability, and evaluating how to develop the basic thought processes, mind-sets or assumptions of people. This unit will explain the specific requirements needed for the successful transformation of an organisation.

Learning Outcomes

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

1. *Evaluate critically change management throughout the history of humankind;*
2. *Assess numerous dimensions and change management models;*
3. *Adopt change management tools in lean enterprise transformation;*
4. *Examine stakeholder influence in the change management process;*
5. *Apply various system tools for enterprise alignment;*
6. *Evaluate employee involvement and team roles in the change management process;*
7. *Rate the role of organisational culture in the change management process.*