MCAST MASTER OF SCIENCE IN LEAN ENTERPRISE

CODE: UC7-09-19
Launching February 2020

Entry Requisite: First degree in business; management, ICT; environmental; engineering, IELTS – 6.5

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.

Learning Outcomes:

Upon successful completion of this Masters Programme the learners will be 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;*

Academic Year 1

1. History and Principles of Lean
2. Lean Tools
3. Lean Production I
4. Lean Administration
5. Lean Leadership
6. Six Sigma and Quality
7. Lean Design and Innovation Management
8. Lean Production II (Advanced Methods)
9. Lean Start-up
10. Change Management

Academic Year 2

Dissertation

Total number of ECTS: 90

Duration: 18 months

STUDY UNIT 1

History and Principles of Lean

MQF Level 7

6 ECTS

E-learning: No

Rationale

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

By the end of this unit, learners should 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;

STUDY UNIT 2

Lean Tools

MQF Level 7

6 ECTS

E-learning: Yes

Rationale

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

By the end of this unit, learners should 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;

STUDY UNIT 3

Lean Production I

MQF Level 7

6 ECTS

E-learning: No

Rationale

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

At the end of this unit, learners 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;

STUDY UNIT 4

Lean Administration

MQF Level 7

6 ECTS

E-learning: No

Rationale

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

At the end of this unit, learners 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;

STUDY UNIT 5

Lean Leadership

MQF Level 7

6 ECTS

E-learning: Yes

Rationale

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

At this end of this unit, 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;

STUDY UNIT 6

Six Sigma and Quality

MQF Level 7

6 ECTS

E-learning: No

Rationale

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

At the end of this unit, learners 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;

STUDY UNIT 7

Lean Design and Innovation Management

MQF Level 7

6 ECTS

E-learning: No

Rationale

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

At the end of this unit, learners 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;

STUDY UNIT 8

Lean Production II (Advanced Methods)

MQF Level 7

6 ECTS

E-learning: No

Rationale

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

At the end of this unit, learners 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;

STUDY UNIT 9

Lean Start-up

MQF Level 7

6 ECTS

E-learning: Yes

Rationale

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

At the end of this unit, learner t 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;

STUDY UNIT 10

Change Management

MQF Level 7

6 ECTS

E-learning: No

Rationale

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

At the end of this unit, 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;