



Module Specification

Principles of Lean Engineering

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Part 1: Information

Module title: Principles of Lean Engineering

Module code: UFMEE8-15-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: The module provides an overview of Lean engineering and its tools and techniques in enabling supporting business improvement and the importance of strategy and the role of leaders in enabling Lean practices that drive a culture of continuous improvement.

The need for a coordinated, structured and scientific approach in adopting and implementing Lean thinking and Lean engineering into an organisation and

addressing the challenges and benefits of such implementation, within and across its enterprise (beyond manufacturing), is also integral to the module.

Features: Not applicable

Educational aims: This module introduces the principles of Lean manufacturing and engineering and the significance of the philosophies, principles, systems and tools in enhancing the effectiveness and profitability of manufacturing and service operations.

Outline syllabus: Lean awareness - introduction to Lean thinking, history, culture and philosophy

Lean principles, measures and metrics - identify and quantify waste to increase process and product performance

Lean techniques (Value Stream Mapping, Standardised Work, Standard Work Combination, Kanban, Poke-Yoke, 5S, Visual Management etc.) - Lean continual improvement tools to reduce wasteful activities, increase process efficiencies and create value

Problem solving and continuous improvement techniques (Plan-Do-Check-Act cycle, KAIZEN, 5-why, Ishikawa, etc.)

Issues and approaches relating to the acceptance and commitment when leading change - sustaining Lean by integrating Lean behaviour, Lean leadership, vision and strategy in an organisation

Introduction to change management methodologies and Lean transformation approaches (Kotter, ADKAR etc.)

Lean initiatives to address the environmental impact and performance during an entire product and process life-cycle

Part 3: Teaching and learning methods

Teaching and learning methods: The principal concepts and scenarios will be delivered through lectures followed by small discussion groups in tutorials to consolidate understanding.

Experiential exercises and simulations will ensure that students can connect with Lean thinking and problem solving techniques covered by this module.

Students will be expected to learn independently by carrying out reading and directed study outside formal sessions.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Evaluate and synthesise relevant information regarding Lean philosophies, principles, systems and tools to enhance the effectiveness of manufacturing and service operations

MO2 Critically reflect upon the need for leading with Lean principles, engaging people through systems and applying tools to solve business problems and eliminate waste

MO3 Demonstrate through evaluation the need for a coordinated, structured and scientific approach in adopting and implementing Lean engineering into an organisation

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ufmee8-15-m.html) via the following link <https://uwe.rl.talis.com/modules/ufmee8-15-m.html>

Part 4: Assessment

Assessment strategy: The assessment strategy has been designed to ensure that students are able to relate the concepts that lie behind the use of Lean thinking and its principles and are able to apply and evaluate the impact of these techniques on business improvement.

Students relate knowledge and skill in applying Lean thinking and its principles undertaking an individual assignment that requires demonstration of independent learning of theory and critical reflection of their work.

The output of this assignment will be a 2,000 word time constrained individual report.

The resit assessment strategy will be the same as the first sit based on a new piece of work.

Assessment tasks:

Report (First Sit)

Description: Individual report (2,000 words); time constrained task (one week).

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Report (Resit)

Description: Referral similar to the first sit.

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Aerospace Engineering (Systems) [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering (Manufacturing) [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering (Systems) [Sep][FT][Frenchay][3yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Manufacturing) [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering with Pilot Studies (Systems) [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering (Manufacturing) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Manufacturing) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Systems) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering (Systems) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Engineering Competence {Apprenticeship-UWE} [Frenchay] PGDip 2023-24

Engineering Management [Frenchay] MSc 2023-24

Engineering Management [Frenchay] MSc 2023-24

Engineering Management [GCET] MSc 2023-24

Engineering Management [GCET] MSc 2023-24

Engineering Competence {Apprenticeship-UWE} [Frenchay] PGDip 2022-23

Engineering Management [Frenchay] MSc 2022-23

Engineering Management [GCET] MSc 2022-23

Aerospace Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21

Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][4yrs] MEng 2020-21

Mechanical Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21

Automotive Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21

Aerospace Engineering [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][4yrs] - Not Running
MEng 2020-21

Aerospace Engineering [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies [Sep][SW][Frenchay][5yrs] MEng 2019-20