Module Specification

Lean Factory Design

Version: 2025-26, v2.0, 06 May 2025

Contents

Part 1: Information

Module title: Lean Factory Design

Module code: UFMFTB-15-3

Level: Level 6

For implementation from: 2025-26

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Engineering

Partner institutions: City of Bristol College, Global College of Engineering and Technology (GCET), University Centre Weston

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: Quality Control Systems 2025-26

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module covers lean concepts and technologies to construct a modern manufacturing environment and the business strategies to generate competitive products in light of the widespread use of ICT, the adoption of the Internet of Things, and Industrial 4.0. In particular, the evaluation of the manufacture and assembly activities against key performance indicators such as process efficacy and efficiency.

Features: Not applicable

Educational aims: The aim of this module is to familiarise students with the principles and tools and techniques for modern smart manufacturing facility design and continued improvement, along with contemporary lean thinking.

Outline syllabus: Topics are likely to include, but not be limited to:

Assembly layout, cells, and line and balancing.

Process considerations while employing design for manufacture and assembly.

Value stream economics – what to make and where.

Determination of material, resource, equipment and component selection for quality, efficiency, performance, manpower and factory layout.

Modelling and simulation to support process design and layout of the modern factory.

Developing the lean supply chain, collaboration, and lean logistics.

Implementation of Industry 4.0 and the Internet of Things in modern production facilities. cybersecurity and statutory safety standards.

Part 3: Teaching and learning methods

Teaching and learning methods: Material will be delivered in whole cohort sessions supported by on-line resources. The majority of the learning activity will take place in group-based workshops working on the manufacturing layout, operation and systems tasks.

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

MO1 Model situations and provide design solutions to manufacturing problems using engineering principles

MO2 Plan and apply continuous process improvement and problem solving strategies for the modern 'SMART' factory

MO3 Critically appraise justifications for Lean thinking strategies and their deployment in the contemporary factory.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/UFMFTB-15-3.html

Part 4: Assessment

Assessment strategy: The main assessment strategy will be as follows:

Students will be provided with an industrial scenario where a product requires the design (or redesign) of a factory layout to meet new manufacturing requirements. The task is structured to verify students' competence and demonstrate their applied understanding of approaches to support the development and planning of a lean, smart production facility.

Students will present their lean smart factory solution in an INDIVIDUAL twelve-minute presentation, which will be followed by eight minutes of questions where the students will defend their solution(s).

The resit strategy will be as follows:

Resit is the same as the first sit

Risk of plagiarism in the portfolio will be mitigated by the individualised variables and data being issues to students with the assignment brief.

Assessment tasks:

Presentation (First Sit)
Description: Students will present their lean smart factory solution in an INDIVIDUAL twelve-minute presentation, which will be followed by eight minutes of questions where the students will defend their solution(s).
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Presentation (Resit)
Description: Students will present their lean smart factory solution (new scenario from first sitting) in an INDIVIDUAL twelve-minute presentation, which will be followed by eight minutes of questions where the students will defend their solution(s).
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:

Mechanical Engineering and Technology (Manufacturing) {Foundation} [Oct][SW][GCET][5yrs] BEng (Hons) 2021-22

Mechanical Engineering and Technology (Manufacturing) {Foundation} [Feb][SW][GCET][5yrs] BEng (Hons) 2021-22

Mechanical Engineering and Technology (Manufacturing) {Foundation} [GCET] BEng (Hons) 2022-23

Mechanical Engineering and Technology (Manufacturing) {Foundation} [GCET] BEng (Hons) 2022-23

Mechanical Engineering with Manufacturing {Apprenticeship-UWE} [UCW] BEng (Hons) 2022-23