University of East Anglia
ACADEMIC PARTNERSHIPS

Module Outline **Part 1- as validated**

1.	**Title**	**Lean Manufacturing and Quality Applications**
2.	**Level**	**6**
3.	**Credits**	**20**
4.	**Indicative Student Study Hours**	**36 hours lectures** **164 hours self-directed learning**
5.	**Core (must take and pass), Compulsory (must take) or Optional**	**Optional**

5. Brief Description of Module (purpose, principal aims and objectives)

The combination of lean manufacturing techniques and associated quality systems are essential in today's engineering manufacturing environment. Organisations need to compete both by bringing new innovative products to market and by improving existing products and processes. It is therefore crucial for manufacturing engineers to be able to design and operate manufacturing systems that employ lean successfully.
The module allows students to investigate the systems adopted by organisations to reduce inefficiencies in the manufacturing process, as well as minimise waste. This module meets these operational and strategic aims as students acquire knowledge to compete in today's global markets.

6. Learning Outcomes - On successful completion of this module a student will be able to:

(*Add more lines if required)*

	Subject Specific Learning Outcomes
1.	Analyse and present the origins and concepts of lean production and supply, including the relationship with innovation.
2.	Understand and apply the evolution of quality management and quality improvement strategies in one's work
3.	Provide a persuasive interpretation of the importance of waste minimisation in all areas of an organisation's activities as well as in a global context.
	Generic Learning Outcomes
4.	Apply knowledge in unfamiliar contexts, synthesising ideas or information to generate

	appropriate solutions
5.	Work with ideas and concepts by evaluating information from a range of perspectives

7. Assessment

Pass on aggregate or Pass all components *(modules can only be pass all components if this is a PSRB requirement)*	Pass on aggregate

Summary of Assessment Plan

	Type	% Weighting	Annonymous Yes / No	Word Count/ Exam Length	Learning Outcomes Coverage	Comments
1.	Written assignment	75%	Yes	3000	LO 2, 3, 5	
2.	Presentation	25%	Yes	10 minutes	LO 1, 3, 4	

Further Details of Assessment Proposals

Give brief explanation of each assessment activity listed

Written assignment

Students are required to identify a manufacturing process and apply quality improvement strategies to reduce inefficiencies. The focus of the assignment is equally on process and outcome; student should argue clearly the advantages and disadvantages of at least two options, and draw an analytical, evidence-based conclusion.

Presentation

Students are asked to critically evaluate lean manufacturing systems in an organisation of their choice by examining approaches to waste minimisation, and present their findings in a 10-minute, evidence-supported, presentation.

8. Summary of Pre and / or Co Requisite Requirements

Not applicable

9. For use on following programmes

BEng Engineering (Mechanical)

Module Specification **Part 2- to be reviewed annually**

1.	**Module Leader**	**Abed Ahmed**

2.	**Indicative Content**
	The module will cover the Principles and application of Lean Manufacturing, waste processes versus value added processes, continuous improvement, employee involvement, Process Analytical Technology (PAT). Principles, tools comparison of Six Sigma with Lean, Analytical trouble-shooting techniques, following process flows and mapping processes on flowcharts, Process bottlenecks and the most effective methods to de-bottleneck. Cycle-time analysis. It also looks at identifying waste and activities which add no value to a business, scheduling systems such as Kanban, lean manufacturing cell setup and value stream maps for manufacturing processes.

3. Delivery Method (*please tick appropriate box)*

Classroom Based	Supported Open Learning	Distance Learning	E-Learning	Work Based Learning	Other (specify)
Yes					

*If the Delivery Method is **Classroom Based** please complete the following table:*

	Activity (lecture, seminar, tutorial, workshop)	**Activity Duration - Hrs**	**Comments**	**Learning Outcomes**
1	Lectures	36h		LO 1-5
	Total Hours	**36h**		

If delivery method is *not* classroom based state lecturer hours to support delivery	Two 20 minutes academic tutorials per student per module

4. Learning Resources

To include contextualised Reading List.

Highly Recommended

Baron, D. (2012) *Business and its Environment.* Harlow: Pearson

Bicheno, J. and Holweg, M. (2016) *The Lean Toolbox: A Handbook for Lean Transformation.*

Buckingham: PISCIE Books

Montgomery, D., Jennings, C., Pfund, M. (2010) *Managing, Controlling and Improving Quality. N.L.:* John Wiley & Sons

Slack, N., Chambers, S., Johnson, R. (2016) *Operations Management.* Harlow: Pearson

Wilson, L, (2015) *How To Implement Lean Manufacturing.* New York: McGraw-Hill Education

Recommended

Dale, B. and Bamford, D. (2016) *Managing Quality: An Essential Guide and Resource Gateway*. N.L.: John Wiley & Sons

Pike, J. et al, (2011) TQM in Action: *A practical approach to continuous performance improvement.* London: Chapman& Hall