

WM9PL-15 Lean Six Sigma and Process Improvement

24/25

Department

WMG

Level

Taught Postgraduate Level

Module leader

Graeme Knowles

Credit value

15

Module duration

4 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

Modern organizations need to evolve quickly in order to deliver rapidly changing customer requirements, and to achieve levels of efficiency and effectiveness which will generate a sustainable market position. This module is designed to equip participants with the knowledge and skills to contribute to excellence within organizations by reducing waste and variation using robust approaches such as Lean and Six Sigma, and their associated tools. The application of process improvement approaches fits within the 'Execution' section of the model with particular impact in creating sustainable value and driving performance and transformation.

Module aims

The module aims to enable participants to understand how organizations manage and improve processes to support policy and strategy and fully satisfy, and generate increasing value for customers and other stakeholders. In particular it focuses on the reduction of waste, variability and associated costs through Lean Six Sigma approaches.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

1. Linking improvement activities to customer satisfaction and company policy and strategy.
2. The importance of customer-focused, process-oriented improvement approaches
3. Six Sigma Define, Measure, Analyse, Improve, Control methodology and associated tools.
4. The significance for business performance of waste and variability in processes.
5. Supplier-Input-Process-Output-Customer analysis to establish key contributors to process performance.
6. Waste analysis and reduction techniques including the seven wastes, quality costs and cause and value adding analysis.
7. Variability reduction techniques such as SPC and Taguchi Methods.
8. Measurement of process performance.
9. Measurement systems capability.
10. Human aspects of improvement activities.
11. Setting-up, running and evaluating improvement projects.
12. EFQM Model and System of Profound knowledge

Learning outcomes

By the end of the module, students should be able to:

- Synthesise the fundamental concepts of variability and waste reduction.
- Critically analyse business process performance and the impact of waste and variability.
- Apply a structured improvement process, including appropriate methodologies and tools.
- Critique improvement processes, including the financial and business implications of options and actions.
- Describe and manage the human aspects of process improvement.
- Plan and manage change projects to deliver company policy and strategy.

Indicative reading list

Six Sigma, Knowles, G. (2011) Bookboon ISBN: 978877681852-4

Quality Management, Knowles, G. (2011) Bookboon ISBN: 978877681875-3

Six Sigma Practitioners Guide to Data Analysis, Wheeler, D.J. (2010) SPC Press
ISBN: 9780945320715

The Six Sigma Way, Pande, P.S., Neuman, P., Cavanagh R.R. (2014) MacGraw-Hill ISBN:
9780945320715

The Six Sigma Handbook (6th Edition), Pyzdek, T. & Keller, P. (2023) MacGraw-Hill Education
ISBN: 9781260121827

Quality Management for Operational Excellence, Goetsch, D.L. & Davis, Davis, S. (2016) Pearson
ISBN: 9780133791853

Smart Manufacturing: the Lean Six Sigma Way, Tarantino, A. (2022) Wiley, ISBN: 1119846617

Quality Management: Reconsidered for the Digital Economy, Beckford, A. (2022) Routledge ISBN:
9780367863029

[View reading list on Talis Aspire](#)

Subject specific skills

Variation reduction using process control, experimental design, data analysis, process improvement using DMAIC system, customer focus, waste reduction, benefit evaluation, improvement initiative design & conduct, Lean, Six Sigma

Transferable skills

Analytical skills, numeracy, team working, reflective practice, communications skills, research skills

Study

Study time

Type	Required
Lectures	10 sessions of 1 hour (7%)
Seminars	20 sessions of 1 hour (13%)
Supervised practical classes	(0%)
Online learning (scheduled sessions)	(0%)
Online learning (independent)	30 sessions of 1 hour (20%)
Other activity	30 hours (20%)
Assessment	60 hours (40%)
Total	150 hours

Private study description

No private study requirements defined for this module.

Other activity description

Research work in teams on subjects set by tutor

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A

	Weighting	Study time	Eligible for self-certification
Assessment component			
Post Module Assignment	70%	40 hours	Yes (extension)
Written post module assignment (2,500 words maximum)			
Reassessment component is the same			
Assessment component			
Critical Review of Group Work	30%	20 hours	Yes (extension)
Critical assessment of the output of the group improvement project which is a core learning element of the module. This will involve appropriate calculations and discussion of results as well as a short reflective piece on the performance of the team.			
Reassessment component is the same			

Feedback on assessment

Marks returned & written feedback given on both assessments.

During the module immediate formative oral feedback is provided on the in-module presentations on which the critical review will be based. This focuses on the content of the presentations, and how these relate to the learning outcomes of the module. The Marks are included in the feedback given on the critical review with written comments. This feedback will be focussed upon the strengths and weaknesses of the work with regard to the module learning outcomes and the assessment marking guidelines.

Students will complete a self-assessment of the written post-module assignment immediately after submission focused on the detailed marking criteria, this will improve targeting of module feedback and build assessment literacy in the students.

Written feedback of a minimum of 250 words is provided for the written post module assignment using the WMG feedback template and relating to the student self-assessment. This feedback will be focussed upon the strengths and weaknesses of the work with regard to the module learning outcomes and the assessment marking guidelines. Suggestions for improvement will also be provided.

Availability

There is currently no information about the courses for which this module is core or optional.