

WM9PJ-15 Design for Excellence

26/27

Department

WMG

Level

Taught Postgraduate Level

Module leader

Jane Marshall

Credit value

15

Module duration

4 weeks

Assessment

Multiple

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module will enable participants to understand how organizations develop, manage and plan design processes to support policy and strategy and fully satisfy, and generate increasing value for customers and other stakeholders. It considers all aspects of design for excellence (Design for X) including topics such as reliability, design for manufacture and assembly, design for sustainability etc. It also brings in concepts of design for six sigma methodology as an approach to design for excellence. In particular it focuses on the management and reduction of risk as well as capturing customer requirements. It also considers all the factors affecting excellence in design. This module supports and aligns with the execution stage of the EFQM framework.

Module aims

The aims of the module are:

- to introduce concepts of design for excellence and design thinking
- to introduce students to Design for Six Sigma (DFSS) and its methodology - Define, Measure, Analyse, Design and Verify and associated tools and for students to examine DFSS in the context of product excellence;
- to highlight the importance of capturing customer requirements to design excellent products and to provide students the opportunity to learn and critique tools such that aid translation of

- Voice of the Customer (VOC) to design requirements such as Quality Function Deployment;
- to introduce the concepts of eliciting expert judgement of engineering concerns and developing project risk registers and highlight how identification of Technical and business risk is paramount in product design;
 - to provide students with the opportunity to apply and critique the use of analytical tools used in Design for X such as Failure Modes Effects Analysis, Fault Tree Analysis, safety analysis methods and Life time data analysis.
 - to identify how technological solutions can be implemented to aid design for excellence, for example using virtual reality and simulation methods as well as monitoring techniques in design for excellence.
 - to evaluate how the module connects to the EFQM framework

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.

- Introduction to design for excellence
- introduce concepts and practice around systems thinking
- mapping design for X approaches to EFQM framework
- technological advancements in design for Manufacture and Assembly
- Application of Design for reliability tools - FMEA, FTA, RBD
- Application of design for Safety tools - HAZOP
- Reliability Testing and alternative approaches
- concepts around design for sustainability
- Life date analysis methods – Exponential and Weibull distribution fitting
- Application of QFD
- Risk management

Learning outcomes

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

- Evaluate, select and demonstrate the use of data analysis techniques to enhance product performance and excellence
- Critically evaluate the use of analytical tools in approaches to enhance product or service design and development
- Achieve a detailed, conceptual understanding of how and why customer requirements are captured to support design for excellence
- Evaluate how design for excellence approaches link to the EFQM Framework
- Reflect on how the module leads to the development of design for excellence of products and services

Indicative reading list

[Reading lists can be found in Talis](#)

Subject specific skills

- knowledge of design for excellence concepts
- practical application of systems thinking concepts
Comprehensive knowledge and understanding of DFSS, it's methodology, tools and when to use it;
- Understand the power of QFD in capturing customer requirements and in context of Design for excellence and learn how to complete house of quality;
- Experience of doing Weibull analysis;
- Experience of applying key tools such as FTA and FMEA;
- Knowledge and practice of design for safety tools.
- Knowledge of DFMA and associated technology
- Knowledge and review of aspects of design for sustainability
- mapping of design excellence approaches to EFQM excellence framework

Transferable skills

Verbal and written communication, oral presentation, teamwork, reflective practice, adaptability, leadership, terminology literacy, research skills, analytical skills.

Study

Study time

Type	Required
Lectures	6 sessions of 1 hour (7%)
Practical classes	24 sessions of 1 hour (27%)
Online learning (scheduled sessions)	(0%)
Online learning (independent)	20 sessions of 1 hour (22%)
Private study	40 hours (44%)
Total	90 hours

Private study description

exercises and recorded lectures on moodle

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A1

	Weighting	Study time	Eligible for self-certification
Specific questions assessing knowledge of concepts and techniques	70%	42 hours	Yes (extension)
Essay question to critically review the design for excellence approaches and tools within context of business excellence.			
Review of Design for excellence aspects and link to EFQM Framework	20%	12 hours	Yes (extension)
Students are allocated to groups and given a topic to research which they present in-class. From the in-class discussion and literature review the student will write an individual review of how Design for Excellence aspects fit with the EFQM excellence framework.			
Reflection how the module leads to design for excellence for products and services	10%	6 hours	Yes (extension)
reflective writing using a reflective model to be submitted at end of the module			

Assessment group R

	Weighting	Study time	Eligible for self-certification
Specific questions assessing knowledge of concepts and techniques	70%	42 hours	No
Review of Design for excellence aspects and link to EFQM Framework	20%	12 hours	No
Reflection how the module leads to design for excellence for products and services	10%	6 hours	No

Feedback on assessment

written feedback will be provided.

Availability

Pre-requisites

To take this module, you must have passed:

- All of
 - [WM9PK-15 Creating Business Excellence](#)

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