

WM9F8-15 Quality, Reliability and Maintenance

23/24

Department

WMG

Level

Taught Postgraduate Level

Module leader

Jane Marshall

Credit value

15

Module duration

2 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

Product and service quality are key factors in the success of a business in terms of customer satisfaction, reduction in cycle time and costs, elimination of error and rework and thus improving profitability and competitiveness. This module provides the opportunity to learn about the quality management theories and practice and to develop skills in the application of key quality and reliability tools and techniques. The module also develops student knowledge of maintenance methods in order to assess how to optimize product and service availability and introduces the concept of equipment asset management.

Module aims

To develop the skills and knowledge of Quality, Reliability and Maintenance by: critically evaluating Quality Management methodologies and tools, capturing customers' requirements using Quality Function Deployment, exploring design for reliability concepts and techniques such as Failure Modes and Effects Analysis, Reliability Testing and Fault Tree Analysis, critical evaluation of maintenance methods and the thus the importance of equipment asset management to any business organisation.

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 Quality, Reliability, and Maintenance concepts
- Comparison of Quality Management philosophies (in-module assessment)
- Application of Quality Tools – SPC and Root Cause Analysis
- Application of Reliability and Maintenance tools - FMEA, FTA, RBD
- Reliability Testing approaches – ALT, HALT, ESS, HASS
- Measuring quality and reliability using process capability and MTBF
- Maintenance Methods and applications including RCM, TPM and CBM
- Application of Kano and QFD for capturing customer requirements
- Design for Six Sigma concepts
- Equipment Asset Management and ISO55000

Learning outcomes

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

- Develop a critical understanding of Quality Management theories
- Reflect on how analytical techniques can be used to ensure Quality and Reliability.
- Develop a conceptual understanding of maintenance philosophies.
- Investigate the role of equipment asset management in an engineering business
- Evaluate how quality, reliability and maintenance tools are applied to aid customer satisfaction

Indicative reading list

As an indicative list, we are providing the existing Talis link for the 10 credit version of this module:

<https://rl.talis.com/3/warwick/lists/B820A953-783D-60A7-A22F-29C16A34F57A.html?lang=en-GB&login=1>

When a new Talis link has been generated for 22/23, this entry will be updated to provide that Talis link instead of this indicative list link.

Subject specific skills

Knowledge, critique and practical application of quality management methods and quality tools, reliability tools, maintenance methods and concepts and use of equipment asset management.

Transferable skills

Verbal and written communication, presentation, teamwork, reflective practice, adaptability, leadership, terminology literacy.

Study

Study time

Type	Required	Optional
Lectures	6 sessions of 1 hour (5%)	
Practical classes	24 sessions of 1 hour (18%)	
Online learning (scheduled sessions)	22 sessions of 1 hour (17%)	
Online learning (independent)	6 sessions of 1 hour (5%)	6 sessions of
Private study	12 hours (9%)	
Assessment	60 hours (46%)	
Total	130 hours	

Private study description

No private study requirements defined for this module.

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
Post-Module Assignment 3200 words essay	80%	50 hours
Quality Management Review group mini-project reviewing Quality Management theories	20%	10 hours

Feedback on assessment

In class debrief of performance on in-module activity; written feedback will be provided in a report for all Post Module assignments.

Availability

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