

WM9F8-15 Quality, Reliability and Maintenance

22/23

Department

WMG

Level

Taught Postgraduate Level

Module leader

Jane Marshall

Credit value

15

Module duration

2 weeks

Assessment

Multiple

Study location

University of Warwick main campus, Coventry

Description

Introductory description

To develop the skills and knowledge to be able to apply Quality, Reliability and Maintenance concepts, techniques and philosophies to:

- increases customer satisfaction
- reduces cycle time and costs
- eliminate errors and rework
- improve profitability and competitiveness

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 QFD
- Design for Six Sigma concepts
- Equipment Asset Management

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 tools such as Quality Function Deployment (QFD), FMEA and FTA are applied to design for quality, reliability and maintenance.

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 (4%)	
Practical classes	24 sessions of 1 hour (16%)	
Online learning (scheduled sessions)	22 sessions of 1 hour (15%)	
Online learning (independent)	6 sessions of 1 hour (4%)	6 sessions of
Private study	12 hours (8%)	
Assessment	80 hours (53%)	
Total	150 hours	

Private study description

No private study requirements defined for this module.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A

	Weighting	Study time
Post-Module Assignment 3200 words essay	80%	74 hours
Quality Management Review group mini-project comparing and contrasting Quality Management methods	20%	6 hours

Assessment group R

	Weighting	Study time
Post-Module Assignment 100% PMA	100%	

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

Courses

This module is Core for:

- Year 1 of TWMS-H1S3 Postgraduate Taught Engineering Business Management (Full-time)