WM9F8-15 Quality, Reliability and Maintenance

24/25

Department
WMG
Level
Taught Postgraduate Level
Module leader
Jane Marshall
Credit value
15
Module duration
4 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 web page

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, analysis of lifetime data to measure reliability performance, critical evaluation of maintenance methods and

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, MTBF and Weibull analysis.
- 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
- Analyse lifetime data to measure reliability performance
- 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
- Reflect on how the module enhances the product quality, reliability and maintenance of an engineering business

Indicative reading list

View reading list on Talis Aspire

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. Lifetime data analysis modelling and skills

Transferable skills

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

Study

Study time

Type	Required	Optional
Lectures	6 sessions of 1 hour (4%)	
Seminars	24 sessions of 1 hour (16%)	
Practical classes	(0%)	
Online learning (scheduled sessions)	(0%)	
Online learning (independent)	30 sessions of 1 hour (20%)	6 sessions of
Private study	30 hours (20%)	
Assessment	60 hours (40%)	
Total	150 hours	

Private study description

work on recorded lectures and exercises provided by tutor. Connect with key texts and literature in the subject to deepen learning.

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A2

	Weighting	Study time
QRM plan	60%	36 hours
create a QRM plan by critically reviewing key QRM tools and asset management within a specific context		
Quality Management Review	20%	12 hours
after group presentation and classroom discussion create an individual review of Quality Management theories		
Lifetime Data Analysis	10%	6 hours
Lifetime data analysis by fitting data to an appropriate distribution and interpreting the results with respect to the bath-tub curve and the context of the question.		

	Weighting	Study time
Reflective diary	10%	6 hours
Reflective diary on the module, to include systemic view of the learning to be submitted after the module at same time as the QRM plan		

Feedback on assessment

written feedback

Availability

Courses

This module is Core for:

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