

Module code: MOD003629	Version: 2 Date Amended: 07/Feb/2023
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1. Module Title
Engineering Quality Management

2a. Module Leader
Biniam Ashagre

2b. School
School of Engineering and the Built Environment

2c. Faculty
Faculty of Science and Engineering

3a. Level
7

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:			

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Quality management methods are essential in today's engineering and business environment. This module provides a critical awareness and an in-depth understanding of the principles of modern quality assurance and their applications in engineering. The history and nature of quality management; views of the gurus and ISO 9000; problem solving tools; benchmarking; quality function deployment; statistical process control; failure modes and effects analysis; significance testing; design of experiments and Taguchi methods are among the topics covered in this module. The module enables you to have a professional working knowledge of the reliability engineering techniques that can be applied to monitor risk assessment and improve the safety of an industrial plant.

6b. Outline Content

History and nature of quality management in engineering. Quality standards and ISO9000. Statistical process control and significance tests. Design of experiments and Taguchi method. Failure modes and effects analysis. Total quality management. Critical review and recommendation of quality management systems. Systematic application of statistics in quality systems and quality improvement in engineering.

6c. Key Texts/Literature

The reading list to support this module is available at: <https://readinglists.aru.ac.uk/>

6d. Specialist Learning Resources

Module Study Guide

7. Learning Outcomes (threshold standards)

No.	Type	On successful completion of this module the student will be expected to be able to:
1	Knowledge and Understanding	Demonstrate a deep understanding of statistical tools and quality management systems to solve complex quality-related problems.
2	Knowledge and Understanding	Understand and communicate effectively on complex quality-related issues with technical and non-technical audiences, evaluating the effectiveness of the methods used.
3	Intellectual, practical, affective and transferrable skills	Formulate and analyse complex quality problems to reach substantiated conclusions by evaluating available data using first principles of mathematics, statistics, and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed.
4	Intellectual, practical, affective and transferrable skills	Systematically apply quality management philosophies to solve quality-related issues in an engineering environment.

8a. Module Occurrence to which this MDF Refers				
Year	Occurrence	Period	Location	Mode of Delivery
2026/7	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	Hours	Learning Outcomes	Details of Duration, frequency and other comments
Lectures	24	1, 3, 4	2 hours lectures per week
Other teacher managed learning	12	1, 3, 4	1 hour tutorial and lab work
Student managed learning	114	1-4	Private study and student-managed group tutorials
TOTAL:	150		

9. Assessment for the above Module Occurrence					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	1-4	50 (%)	Fine Grade	40 (%)
A 1500-word assignment maps to Engineering Council Learning Outcome M17					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Examination	1 3	50 (%)	Fine Grade	40 (%)
A 1.5-hour exam maps to Engineering Council Learning Outcome M2					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:

(a) achieve the qualifying mark for each element of fine graded assessment as specified above

(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]