



Module Definition Form (MDF)

| | |
|-------------------------------|---|
| Module code: MOD003629 | Version: 2 Date Amended: 07/Feb/2023 |
|-------------------------------|---|

| |
|--------------------------------|
| 1. Module Title |
| Engineering Quality Management |

| |
|--------------------------|
| 2a. Module Leader |
| Samuel McMaster |

| |
|---|
| 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 |
| 2025/6 | 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]