



## **Module Specification**

### **Reliability Engineering and Asset Management**

Version: 2023-24, v3.0, 03 May 2024

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## Part 1: Information

**Module title:** Reliability Engineering and Asset Management

**Module code:** UFMFPB-15-3

**Level:** Level 6

**For implementation from:** 2023-24

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**College:** College of Arts, Technology and Environment

**School:** CATE School of Engineering

**Partner institutions:** None

**Field:** Engineering, Design and Mathematics

**Module type:** Module

**Pre-requisites:** None

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

**Professional, statutory or regulatory body requirements:** None

## Part 2: Description

**Overview:** The module is designed to equip participants with the reliability engineering concepts and skills that will be needed by technically trained engineers within industrial companies to establish highly reliable and cost effective systems. The module will introduce aspects of monitoring, control, reliability, survivability, integrity and maintenance.

**Features:** Not applicable

**Educational aims:** This module will provide a professional-level working knowledge of the advanced techniques of reliability engineering and an ability to apply them to improving the maintenance, the maintainability of existing and proposed manufacturing plant in their workplace.

**Outline syllabus:** The module includes:

Reliability data analysis: types and sources of reliability data, data collection, data cleansing, data accuracy and precision, model fitting, big-data, incomplete data, redundant data, not-detailed data

Applications of statistical simulation in system reliability and availability modelling

Maintenance modelling, planning, scheduling, and optimisation

Probability of failure, Cost of failure, and risk of failure in specific manufacturing systems

System's life-cycle: Life-cycle cost (LCC) analysis, identification of key cost drivers

### **Part 3: Teaching and learning methods**

**Teaching and learning methods:** Scheduled learning: material will be delivered in whole cohort sessions and via on-line resources. The majority of the learning activities will take place through a combination of lectorials, discussion groups, case studies and 'hands on' use of tools and techniques that provide the practical knowledge to undertake a risk and reliability analysis and present improvement solutions.

Independent learning: includes hours engaged with essential reading, assignment preparation and completion etc.

**Module Learning outcomes:** On successful completion of this module students will achieve the following learning outcomes.

**MO1** Collect and analyse manufacturing plant data to facilitate the diagnosis and elimination of reliability problems

**MO2** Select and apply the most appropriate techniques for reliability assessment

**MO3** Demonstrate an in-depth appreciation of the contribution of reliability and asset management techniques to competitiveness of a manufacturing enterprise

**MO4** Analyse quality problems and apply suitable techniques to improve product quality

**Hours to be allocated:** 150

**Contact hours:**

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

**Reading list:** The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/UFMFPB-15-3.html) via the following link

<https://uwe.rl.talis.com/modules/UFMFPB-15-3.html>

## **Part 4: Assessment**

**Assessment strategy:** The main sit strategy will be as follows:

The examination is summative and assesses the students' theoretical applied knowledge and understanding of system reliability concepts, methods and techniques, and their ability to apply them in a variety of industrial scenarios.

The technical report will take into account both the professional practise demonstrated in the management of the projects and assessment of system reliability applied to a production system scenario. The technical report will take the form of a consultancy document to an industrial client proposing reliability problem mitigation for their production system.

Resit strategy is the same as the first sit.

**Assessment tasks:**

**Report (First Sit)**

Description: 2000 word (individual) technical report

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3, MO4

**Examination (Online) (First Sit)**

Description: 4 hours examination

Weighting: 70 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

**Report (Resit)**

Description: 2000 word (individual) technical report

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3, MO4

**Examination (Online) (Resit)**

Description: 4 hour examination

Weighting: 70 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Mechanical Engineering (Manufacturing) [BIET] BEng (Hons) 2023-24

Mechanical Engineering (Manufacturing) [AustonSingapore] BEng (Hons) 2023-24

Mechanical Engineering with Manufacturing {Apprenticeship-UWE}

[Sep][FT][UCW][4yrs] BEng (Hons) 2021-22

Mechanical Engineering with Manufacturing {Apprenticeship-UWE}

[Sep][FT][COBC][4yrs] BEng (Hons) 2021-22

Mechanical Engineering with Manufacturing {Apprenticeship-UWE}

[Sep][FT][UCW][4yrs] - Not Running BEng (Hons) 2020-21

Mechanical Engineering with Manufacturing {Apprenticeship-UWE}

[Sep][FT][COBC][4yrs] - Not Running BEng (Hons) 2020-21