



Module Specification

Reliability Engineering and Asset Management

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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: 2021-22

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Delivery locations: Auston Institute of Management Singapore, British Institute of Engineering and Technology Sri Lanka, City of Bristol College, Frenchay Campus, University Centre Weston

Field: Engineering, Design and Mathematics

Module type: Standard

Pre-requisites: Mathematics for Manufacturing 2021-22

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

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: See educational aims and assessment.

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:

Component A: 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.

Component B: 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.

The resit strategy will be as follows:

Component A: 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.

Component B: Will provide the individual student with the opportunity to rework the written assignment, or where this is the first attempt a different industrial scenario

shall be provided. Risk of plagiarism with Component B will be mitigated by the individualised variables and data for the industrial scenario being issues to students with the assignment brief.

Assessment components:**Examination (Online) - Component A (First Sit)**

Description: Online examination: 4 hours

Weighting: 70 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Report - Component B (First Sit)

Description: 2000 word (individual) technical report

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3, MO4

Examination (Online) - Component A (Resit)

Description: Online examination: 4 hours

Weighting: 70 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

Report - Component B (Resit)

Description: 2000 word (individual) technical report

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Mechanical Engineering (Manufacturing) [May][FT][BIET][12months] BEng (Hons)
2021-22

Mechanical Engineering (Manufacturing) [Sep][FT][AustonSingapore][12months]
BEng (Hons) 2021-22

Mechanical Engineering (Manufacturing) [Feb][FT][BIET][12months] BEng (Hons)
2021-22

Mechanical Engineering (Manufacturing) [Feb][FT][AustonSingapore][12months]
BEng (Hons) 2021-22

Mechanical Engineering (Manufacturing) [May][FT][AustonSingapore][12months]
BEng (Hons) 2021-22

Mechanical Engineering with Manufacturing {Apprenticeship-UWE}
[Sep][FT][UCW][4yrs] BEng (Hons) 2018-19

Mechanical Engineering with Manufacturing {Apprenticeship-UWE}
[Sep][FT][COBC][4yrs] BEng (Hons) 2018-19