Module Specification

Mathematics for Manufacturing

Version: 2021-22, v2.0, 28 Jun 2021

Contents

Part 1: Information

Module title: Mathematics for Manufacturing

Module code: UFMFG8-15-2

Level: Level 5

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: Frenchay Campus

Field: Engineering, Design and Mathematics

Module type: Standard

Pre-requisites: Engineering Mathematics 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: The module is designed to familiarise students with, extend their knowledge of, and provide a solid foundation of mathematical and statistical techniques required later in the course. In particular students will develop

understanding of the principles and use of statistical process control techniques, process capability methods.

Outline syllabus: The syllabus includes:

Capability Analysis
Pareto chart and Gauge Study
Numerical Methods for solving Partial Differential Equations (PDEs)

Part 3: Teaching and learning methods

Teaching and learning methods: See Educational Aims and Learning Outcomes.

Module Learning outcomes:

MO1 Use software to carryout statistical analysis and provide in context interpretation

MO2 Define the fundamental concepts of statistical process control, and process capability in detail

MO3 Define the fundamental concepts of Design of Experiments, and analysis of variance using statistical software

MO4 Evaluate and apply the use of basic statistical analysis and their work-place application

MO5 Formulate finite-difference schemes for certain ordinary or partial differential equations and use an appropriate numerical method to solve associated systems of linear equations

MO6 Provide valid interpretations of mathematical concepts and solutions in a given mathematical or physical context

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 via the following link https://uwe.rl.talis.com/index.html

Part 4: Assessment

Assessment strategy: In the first sit, the statistics elements of this module will be assessed at the end of the module through a written assignment based on an engineering problem in industry. The assessment will take into account both the professional application and practice demonstrated in the management of the project. The mathematics elements of the module will be assessed using an online e-assessment and will be based on questions that students have seen previously in formative tests.

The resit assessment strategy will follow the same format as the 1st sit assessment.

Assessment components:

Examination (Online) - Component A (First Sit)
Description: E-assessment (1 hour)
Weighting: 25 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Written Assignment - Component B (First Sit)
Description: Written assignment (3500 words)
Weighting: 75 %
Final assessment: No
Group work: No
Learning outcomes tested: MO2, MO4, MO5, MO6

Examination (Online) - Component A (Resit)

Description: E-assessment (1 hour)
Weighting: 25 %
Final assessment: No
Group work: No
Learning outcomes tested:

Written Assignment - Component B (Resit)
Description: Written assignment (3500 words)
Weighting: 75 %
Final assessment: Yes
Group work: No
Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study: