



## **Module Specification**

### **Manufacturing Technology**

Version: 2021-22, v4.0, 26 Apr 2022

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## Part 1: Information

**Module title:** Manufacturing Technology

**Module code:** UFMFP7-15-2

**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 Practice 1 2020-21

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

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

## Part 2: Description

**Overview:** Modern manufacturing technology entails a diverse range of disciplines and their interaction including, Computer Aided Design and Manufacture, Metrology, Processes, and Manufacturing Automation. The module is designed to familiarise students with these interacting technologies, and explore their application in the modern manufacture environment.

**Features:** Not applicable

**Educational aims:** The aim of this module is to equip students with the knowledge and skills to compare and appraise the application of a range of interacting technologies in the modern manufacture environment.

**Outline syllabus:** Advanced manufacturing process, such as:

Additive Layer Manufacture (ALM),  
Waterjet cutting/ profiling,  
Nano and micro machining, and  
Laser machining.

Modern methods to inspect precision machined engineering components:

Technologies and tools  
Uncertainties in measurement

Computer Numerical Control (CNC):

Machine tool layout and construction, and  
Manual part programming.

Computer Aided Manufacture (CAM):

Application,  
Manufacturing feature recognition, and  
Industrial software.

Fixed and Flexible automation:

Configurations,  
End effectors,  
Drive systems,

Programming methods and,  
Basic industrial applications.

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

**Teaching and learning methods:** Students will be exposed to up to date applications from manufacturing industries, to ensure that they have full appreciation and understanding of modern manufacturing technologies.

Scheduled learning: material will be delivered in whole cohort sessions and via on-line resources. The majority of the learning activities will take place as a combination of lectorials, discussion groups, case studies and 'hands on' use of tools and approaches that provide exposure to contemporary advanced manufacturing, its systems and technologies.

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** Explain and apply the principles of a range of modern manufacturing technologies.

**MO2** Comparatively analyse and evaluate the benefits of modern manufacturing processes and discuss their limitations.

**MO3** Analyse and evaluate manufacturing processes to maximise value-added and equipment/manpower utilization

**MO4** Evaluate design, automation and metrology in modern manufacturing processes.

**MO5** Demonstrate the application of advanced CAM to undertake 3-axis CNC machining operations.

**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/index.html) via the following link <https://uwe.rl.talis.com/index.html>

**Part 4: Assessment**

**Assessment strategy:** Component A: The examination is summative and assesses the students' understanding of concepts, manufacturing methods and techniques, and their ability to apply them to a variety of industrial scenarios.

Component B: The ON LINE TEST is intended to encourage early engagement with the module and to provide timely feedback to help identify strengths and weaknesses related to knowledge of manufacturing processes. The written report is structured to verify students' competence and demonstrate understanding of a range of manufacturing technologies and computer numerical controlled (CNC) systems. Requiring the students to demonstrate an ability to apply this knowledge in a realistic and representative format for a production engineer producing a component on a CNC lathe.

The resit strategy will be as follows:

Component A: The examination is summative and assesses the students' understanding of concepts, manufacturing methods and techniques, and their ability to apply them to a variety of industrial scenarios.

Component B: The written report is structured to verify students' competence and demonstrate understanding of a range of manufacturing technologies and computer numerical controlled systems. Requiring the students to demonstrate an ability to

apply this knowledge in a realistic and representative format for a production engineer producing a component on a multi axis CNC lathe. In addition the student will be required to select pre and post processing manufacturing technologies for a given component.

Risk of plagiarism will be mitigated by the individualised variables and data being issues to students with the assignment brief.

**Assessment components:**

**Examination (Online) - Component A (First Sit)**

Description: Online examination: 4 hours

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3, MO4

**Report - Component B (First Sit)**

Description: 2000 word individual report and cnc program

Weighting: 40 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO5

**In-class test - Component B (First Sit)**

Description: Dewis test

Weighting: 10 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO5

**Examination (Online) - Component A (Resit)**

Description: Online examination: 4 hours

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3, MO4

**Report - Component B (Resit)**

Description: 2000 word individual report and cnc program

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO5

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Mechanical Engineering with Manufacturing {Apprenticeship-UWE}  
[Sep][FT][UCW][4yrs] BEng (Hons) 2020-21

Mechanical Engineering with Manufacturing {Apprenticeship-UWE}  
[Sep][FT][COBC][4yrs] BEng (Hons) 2020-21

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