Module Specification

Advanced Manufacturing Technology

Version: 2025-26, v3.0, 06 May 2025

Contents

Part 1: Information

Module title: Advanced Manufacturing Technology

Module code: UFMFYS-15-3

Level: Level 6

For implementation from: 2025-26

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 modern manufacturing environment employs a spectrum of technologies, tools and systems to produce contemporary products. This module provides practitioner with a concise overview of such technologies and systems. Which range from highly advanced CNCs to manufacturing robots and the lean operation systems to management them. The module then guides appropriate technology and system selection, along with knowledge of programming and computational tools to produce a product on multi axis machines.

Features: Not applicable

Educational aims: The aim of this module is to enable students to understand the tools, concepts and practices employed by modern manufacturing organisations to satisfy customer requirements.

Outline syllabus: Topics likely to include but not limited to:

Advanced Manufacturing Systems.

Introduction to the trends, legislation and regulations governing global manufacturing sectors such as automotive.

Introduction to automotive manufacturing strategies such as the Toyota Production System.

Implementation of batch vs flow manufacture.
Process management, measurement and control, Six Sigma.
Planning and control of production, scheduling techniques.

Advanced Manufacturing Technologies.

CAD/CAM/CAE.
Flexible manufacturing systems.
Rapid prototyping and time compression technologies.
Manual and computer-aided CNC programming

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 on a combination of lectorials, discussion groups, case studies and 'hands on' use of tools and techniques 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 Apply knowledge and understanding of the principles of advanced manufacturing systems management

MO2 Justify lean manufacturing strategies and their deployment

MO3 Select CAD/CAM/CAE tools and technologies to generate and manufacture a component on a 3 Axis machine centre.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://rl.talis.com/3/uwe/lists/8831504A-DDC5-ACD8-0355-7309EF025A84.html?lang=en-gb&login=1

Part 4: Assessment

Assessment strategy: The module will be assessed as follows:

An individual technical report (3000 words)

The students will be provided with an industrial component and a hypothetical manufacturing setup and requirements. The students will be assessed over two elements:

- Firstly, to propose production requirements using current legislation & regulations, quality strategies, and lean thinking for the hypothetical manufacturing scenario

(50% of the technical report).
- Secondly, the application of computer-aided tools and the development of the manufacture of the industrial component on a multi-axis computer numerically controlled machine (50% of the technical report).

Additionally, there will be opportunities for formative assessment, which does not contribute to the module mark. For example, you may be asked to give a presentation, or to compete against other group's work to assess its relative performance.

Feedback will be given on your work each week in the lab sessions.

The resit assessment will have same profile as the first sit

Assessment tasks:

Written Assignment (First Sit)
Description: Individual assignment (3000 words)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Written Assignment (Resit)
Description: Individual assignment (3000 words)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electro-mechanical Engineering (Nuclear) {Apprenticeship-UCW}{Top-Up}[Frenchay] BEng (Hons) 2025-26

Electro-mechanical Engineering {Apprenticeship-UCW}{Top-Up}[Frenchay] BEng (Hons) 2025-26

Engineering {Top-Up} [Frenchay] BSc (Hons) 2025-26

Engineering {Top-Up} [Frenchay] BSc (Hons) 2025-26

Mechanical Engineering [Frenchay] BEng (Hons) 2023-24

Mechanical Engineering [Frenchay] MEng 2023-24

Automotive Engineering [Frenchay] BEng (Hons) 2023-24

Automotive Engineering [Frenchay] MEng 2023-24

Mechanical Engineering [Sep][PT][Frenchay][7yrs] MEng 2021-22

Automotive Engineering [Frenchay] MEng 2023-24

Automotive Engineering [Frenchay] BEng (Hons) 2023-24

Mechanical Engineering {Apprenticeship-UCS} {Top-Up} [Frenchay] BEng (Hons) 2025-26

Mechanical Engineering {Apprenticeship-UCW} {Top-Up} [Frenchay] BEng (Hons) 2025-26

Mechanical Engineering {Apprenticeship-GlosColl} {Top-Up} [Frenchay] BEng (Hons) 2025-26

Mechanical Engineering [Frenchay] MEng 2022-23

Mechanical Engineering [Frenchay] MEng 2023-24

Automotive Engineering {Foundation}[Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22

Mechanical Engineering {Foundation}[Sep][SW][Frenchay][5yrs] BEng (Hons) 2021-22

Mechanical Engineering [Frenchay] MEng 2022-23

Mechanical Engineering [Frenchay] BEng (Hons) 2022-23

Automotive Engineering {Foundation} [Frenchay] BEng (Hons) 2022-23

Automotive Engineering [Frenchay] MEng 2022-23

Automotive Engineering [Frenchay] BEng (Hons) 2022-23

Mechanical Engineering {Foundation} [Frenchay] BEng (Hons) 2022-23

Mechanical Engineering [Sep][PT][Frenchay][6yrs] BEng (Hons) 2021-22