



Module Specification

Fundamentals of Materials for Manufacturing

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Part 1: Information

Module title: Fundamentals of Materials for Manufacturing

Module code: UFME3K-15-1

Level: Level 4

For implementation from: 2024-25

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Engineering

Partner institutions: University Centre Weston

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 explores how engineering principles are related to the properties of materials, manufacturing and environmental sustainability. Mathematics and numerical modelling are presented in an engineering context in order to strengthen confidence when addressing future engineering challenges.

Features: Not applicable

Educational aims: The module covers a range of theories and techniques that are central to core engineering practice. Included in the module is the study of materials science and manufacturing techniques. The module explains key engineering principles by integrating them with design methodologies, to provide a toolkit to allow further investigation when solving real world engineering problems.

Outline syllabus: Materials:

Classification of Materials

Structure and bonding

Environmental impact of material production and manufacturing processes

Material property and sustainability selection, using Ashby charts

Material test and measurement

Crystal structures and defects

Polymer structure, properties and manufacturing processes

Composites structure, properties and manufacturing mechanisms

Manufacturing:

Selection of manufacturing processes

Primary Processes

Presswork and Associated Processes

Material Removal Processes

Introduction to assembly and joining techniques

Emerging technologies

Part 3: Teaching and learning methods

Teaching and learning methods: The module delivery is designed to bring together the theory of engineering materials, concepts, analysis and practical applications so that students can consolidate theoretical knowledge through practice and observation. The module combines lectures, lectorials, class-based interactive workshops and technical workshops to introduce students to the experience of working on real engineering challenges. The module devotes time to the use of laboratories and workshops in order to demonstrate the importance of both analytical

and practical approaches to problem solving thereby allowing students to develop the skills needed to work in a safe and professional manner with their peers to deliver findings .

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

MO1 Classify materials according to their properties and relate them to structure.

MO2 Select, test and evaluate material properties and demonstrate how they relate to the implementation of manufacturing processes.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 0

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ufmfls-30-1.html) via the following link <https://uwe.rl.talis.com/modules/ufmfls-30-1.html>

Part 4: Assessment

Assessment strategy: 20 minutes presentation that compares and contrasts theory with practice and the application of manufacturing process to meet modern requirements.

Assessment tasks:

Presentation (First Sit)

Description: Individual presentation (20 minutes)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Presentation (Resit)

Description: Individual presentation (20 minutes)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electro-mechanical Engineering {Apprenticeship-UCW}[UCW] BEng (Hons) 2024-25

Aeronautical Engineering {Apprenticeship-UCW}[UCW] BEng (Hons) 2024-25