



## **Module Specification**

### **Concurrent Engineering and Design for Manufacture**

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## Part 1: Information

**Module title:** Concurrent Engineering and Design for Manufacture

**Module code:** UFMEEC-15-M

**Level:** Level 7

**For implementation from:** 2023-24

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**Faculty:** Faculty of Environment & Technology

**Department:** FET Dept of Engineering Design & Mathematics

**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:** This module introduces the rationale for employing Concurrent Engineering and provides an understanding of the techniques that can be applied during the different stages in the product life cycle. As the majority of costs associated with a product are determined at an early stage in design, techniques are introduced that can assist, as early as possible and simultaneously, with identifying and addressing issues associated with various stages of the product life cycle helping to decrease product development times. Students learn about applying such

concepts and techniques including the capturing of customer needs, sharing information and addressing issues at an early stage for defining conceptual specifications, developing robust designs and ensuring product and process quality.

**Features:** Not applicable

**Educational aims:** On successful completion of this module students will have an appreciation of issues relating to corporate culture, organisational structures and to business in general in the context of successful implementation of Concurrent Engineering.

**Outline syllabus:** Rationale and concepts of Concurrent Engineering

Issues related to the corporate culture and the organisational structures in the context of successful implementation of Concurrent Engineering

Product design and development methodologies including capturing customer needs for defining conceptual specifications

Principles of Design for X-ability (manufacturing, assembly, maintainability, sustainability, etc.)

Principles of designing statistical experiments and Robust Design

Additive Manufacturing techniques for fast product development

Issues related to cost factors in a Concurrent Engineering environment

Technologies for communication and collaboration

Life-Cycle Management and Product Data Management in a Concurrent Engineering environment

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

**Teaching and learning methods:** The principal concepts and scenarios will be delivered through lectures followed by small discussion groups in tutorials to consolidate understanding.

Case studies and 'hands on' use of tools and techniques will ensure that students can explore the advanced manufacturing context covered by this module.

Students will be expected to learn independently by carrying out reading and directed study outside formal sessions.

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

**MO1** Analyse and critically appraise the existing product design and development environment of an organisation and recommend changes to support Concurrent Engineering methodologies

**MO2** Apply Concurrent Engineering methodologies for efficient product and process design and development contributing to the competitiveness of an organisation.

**MO3** Analyse and critically evaluate the strategy and operational environment of an organisation and recommend changes to improve the effectiveness of integrated product design and development

**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/ufmeec-15-m.html) via the following link <https://uwe.rl.talis.com/modules/ufmeec-15-m.html>

## Part 4: Assessment

**Assessment strategy:** The assessment strategy has been designed to ensure that students are able to relate the concepts that lie behind the use of Concurrent Engineering methodologies in the design and development of products and are able to apply and evaluate the impact of these techniques on business improvement.

Students relate knowledge and skill in applying Concurrent Engineering methodologies within an engineering or design context, undertaking an individual assignment that requires demonstration of independent learning of theory and critical reflection of their work.

The output of this assignment will be a 2,000 word time constrained individual report.

The resit assessment strategy will be the same as the first sit based on a new piece of work.

**Assessment tasks:**

**Report (First Sit)**

Description: Individual report (2,000 words); time constrained task (one week).

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

**Report (Resit)**

Description: Individual report (2,000 words); time constrained task (one week).

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:

Aerospace Engineering (Systems) [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering (Manufacturing) [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering (Systems) [Sep][FT][Frenchay][3yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Manufacturing) [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering with Pilot Studies (Systems) [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering (Manufacturing) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Manufacturing) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Systems) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering (Systems) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Mechanical Engineering [Sep][PT][Frenchay][2yrs] - Not Running MSc 2022-23

Mechanical Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21

Automotive Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21

Aerospace Engineering [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Aerospace Engineering [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies [Sep][SW][Frenchay][5yrs] MEng 2019-20

Mechanical Engineering [Sep][PT][Frenchay][7yrs] MEng 2018-19

Mechanical Engineering {Foundation} [Sep][SW][Frenchay][6yrs] MEng 2018-19

