# Module Specification

## Platform and Major Systems

Version: 2023-24, v2.0, 06 Jul 2023

**Contents**

## Part 1: Information

**Module title:** Platform and Major Systems

**Module code:** UFMFRH-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:** Not applicable

**Features:** Not applicable

**Educational aims:** The module aims to provide an advanced study of the major aircraft systems and their interactions when combined within an aircraft platform.

**Outline syllabus:** The syllabus includes:

Introduction: The properties, technologies, applications, and development processes that differentiate aircraft systems.

Systems: The variety of systems that exist within an aircraft, their individual functions and required properties, and the interactions between them that is required to control the aircraft.

Architectures: Currently available system platform architectures, their advantages and disadvantages in terms of design, operation, suitability, maintenance and life cycle. The likely evolution of such architectures in the future.

Hardware: The challenges and solutions associated with creating reliable hardware components and subsystems capable of surviving in hostile airborne environments.

Software: The challenges and solutions associated with creating reliable, trustworthy and robust software for safety-critical avionics applications.

Data Communications: The properties of various specialist data-transmission standards available for integration of avionics units, their advantages and disadvantages.

Analysis: The tools and techniques available for systematic capturing, abstracting and analysis of the combined behaviour of interacting systems at a platform level.

Modelling: The use of tools and techniques available for creation of dynamic system models.

Testing: The use of tools and techniques available for generating repeatable tests for created dynamic system models.

## Part 3: Teaching and learning methods

**Teaching and learning methods:** The module includes presented material and group laboratory project work so that students can experience how multiple complex aircraft systems (including their controlling avionics and sensor/actuator suites) interact.

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

**MO1** Examine and differentiate the function and configuration of various aircraft system architectures

**MO2** Interpret and predict the interactions between multiple asynchronous systems

**MO3** Gain an understanding of how system interaction leads to emergent properties that may enhance or degrade a platform's performance

**MO4** Manage the interfaces between multiple systems at a communication and functional level

**MO5** Show cognitive skills with respect to modelling and simplifying real problems

**MO6** Define and develop suitable testing methods for evaluating a system

**MO7** Recognise, explain and apply the need for a platform level approach to system design

**MO8** Critically evaluate candidate designs for component systems in terms of their platform level implications

**MO9** Reflect and comment on the role of modelling and analysis in platform level system design

**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/modules/ufmfrh-15-m.html

## Part 4: Assessment

**Assessment strategy:** The assessment will bring all the concepts together via the case study, which is based on real projects from the organisation.

It consists of a single submission:

A group report describing and reflecting on the team coursework performed during and outside scheduled contact periods. This element is expected to pick up on the technical details of the project, as per the learning outcomes including an individual reflection.

This submission will show how well the team worked on the case study to meet the organisation's capability requirements, and providing an individual reflection of the activity for personal career development.

Resit is the same as the first sit

Resit deliverable(s) will be scaled appropriately to group size and task complexity

**Assessment tasks:**

**Report** (First Sit)
Description: Group project report (max 2500 words) includes individual reflection
Weighting: 100 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7, MO8, MO9

**Report** (Resit)
Description: Group project report (max 2500 words) includes individual reflection

Resit deliverable(s) will be scaled appropriately to group size and task complexity
Weighting: 100 %
Final assessment: Yes
Group work: Yes
Learning outcomes tested:

## Part 5: Contributes towards

This module contributes towards the following programmes of study:

Digital Electronic Systems Engineering {Apprenticeship-UWE} [Frenchay] - Suspended MSc 2022-23