



## **Module Specification**

### **Aerospace Group Design Project**

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## Part 1: Information

**Module title:** Aerospace Group Design Project

**Module code:** UFMFUU-15-3

**Level:** Level 6

**For implementation from:** 2022-23

**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:**

**Module type:** Standard

**Pre-requisites:** Aerospace Systems Design 2021-22

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

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

## Part 2: Description

**Overview:** The ability to work in multidisciplinary teams is a key attribute and requirement of a professional aerospace engineer. Each team will work on developing innovative solutions to a real aerospace engineering challenge from industry or research.

The delivery of the module through seminars and workshops will allow students to

follow the development and design cycle of an aerospace engineering project. This is a problem based learning module and students will apply the project management skills covered in Engineering Practice 1 and Engineering Practice 2 in the management of the team and the successful development of an engineering solution to the challenge.

This module also provides an opportunity for students to demonstrate an entrepreneurial mind set with students expected to research the business context and opportunities to commercialise their engineering solution.

**Features:** Not applicable

**Educational aims:** The aim of this module is to ensure that students demonstrate the ability to work in teams on real aerospace engineering problems that integrate knowledge and skills from a range of aerospace disciplines.

**Outline syllabus:** Task Specification

Design processes and decisions

Concept selection and Economics

Geometrical aspects

Design regulations

Initial sizing

Aerodynamic and structural design

Power plant design

Performance

Systems and systems integration

Design iterations, validation and verification

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

**Teaching and learning methods:** This module integrates many facets of the students learning in a multi-disciplinary design and development project.

A combination of lectures, seminars and case studies are used to present core topics from the syllabus. Laboratory sessions are used for team meetings, development work and familiarisation with specialist software and test equipment.

Independent learning includes hours engaged with essential reading, further team meetings and laboratory based development work undertaken outside the scheduled classes. Students will be expected to maintain the management tools used as part of the group coursework.

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

**MO1** Select appropriate project management techniques and maintain relevant documentation to support a design and development project. (P11m, G2, G3)

**MO2** Integrate knowledge from aerospace engineering disciplines to facilitate multidisciplinary project work. (P4, EL4, D2, D3b, G4)

**MO3** Design and justify engineering solutions to an open-ended technical problem using a systems approach. (SM3b, EA2, EA4b, D2, D4, P8)

**MO4** Appraise the commercial opportunities of an engineering solution with reference to intellectual property legislation and relevant industrial standards. (P1, P5)

**MO5** Implement an appropriate verification and validation strategy to ensure project requirements are met and risks are reduced. (D2, EL6)

**Hours to be allocated:** 150

**Contact hours:**

Independent study/self-guided study = 114 hours

Face-to-face learning = 8 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/ufmfuu-15-3.html) via the following link <https://uwe.rl.talis.com/modules/ufmfuu-15-3.html>

**Part 4: Assessment**

**Assessment strategy:** The assessments follow the development and design cycle with formative assessments used to provide feed forward opportunities and summative assessment used to evaluate achievement and depth of understanding.

There are two components of assessment. The overall assessment is through a team based design and implementation exercise.

Component A will comprise two group presentations: the first a poster presentation at the Preliminary Design Review (PDR) stage, and the second an oral presentation at the Final Design Review (FDR) stage. Students will demonstrate their individual and collective understanding of project management, the design process and approach, and validation aspects of the group design project.

Component B will be a portfolio submission that includes a group technical report (7500 words for a group size of 4) and documentation that provides evidence of how the group has managed the project. The group must provide a full audit trail of their design and implementation, including minutes of meetings and technical reviews. Students will work each week in their laboratory sessions and at these classes staff will be able to observe and provide formative feedback. Each student will obtain an individual mark on application of the peer review process in accordance with the Department Group Work Policy.

Resit strategy:

Component A will be an individual presentation where students demonstrate their individual understanding of project management, the design process, and validation aspects of the group design project.

Component B: Individual submission of a 2000 word report that describes the technical solution to an appropriately scaled engineering challenge.

**Assessment components:**

**Presentation - Component A (First Sit)**

Description: Group presentation (30 minutes)

Weighting: 25 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO1, MO3, MO5

**Poster - Component A (First Sit)**

Description: Poster presentation at the Preliminary Design Review (PDR) stage

Weighting: 25 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO1, MO3, MO5

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

Description: Portfolio of project work undertaken (7500 words group of 4)

Weighting: 50 %

Final assessment: Yes

Group work: Yes

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

**Presentation - Component A (Resit)**

Description: Individual presentation for CDR

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO3, MO5

**Report - Component B (Resit)**

Description: Individual report (2000 words)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Aerospace Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2020-21

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

Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][3yrs] BEng (Hons)  
2020-21

Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][4yrs] MEng 2020-21