Module Specification

Aerospace Engineering

Version: 2022-23, v3.0, 20 Jul 2022

Contents

Part 1: Information

Module title: Aerospace Engineering

Module code: UFMFRU-15-1

Level: Level 4

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, University Centre Weston

Field: Engineering, Design and Mathematics

Module type: Standard

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 student engineers to the field of aerospace engineering including an overview of the aerospace industry and the aerospace product life cycle. Core aerospace knowledge and principles are introduced including aircraft familiarisation, effects of the atmosphere on aerospace vehicles and basic principles aircraft flight. Students build and consolidate this aerospace knowledge in a variety of forms through traditional lectures, seminars, field-trips and site visits and

practical oriented sessions. This provides a solid foundation to enable deeper exploration and analysis of aerospace concepts in modules at higher levels.

Students also undertake a model aircraft design and build project where they apply this aerospace knowledge and the engineering design process to define, select the most promising solution and manufacture and evaluate the prototype solution. Students communicate their model aircraft design and build project findings and analysis through a group presentation.

Features: Not applicable

Educational aims: The aim of this module is to introduce the field of aerospace engineering, the aerospace product life cycle and core aerospace knowledge and principles which are consolidated through an assessed model aircraft design and build activity.

Outline syllabus: Aerospace Product Life Cycle
The Atmosphere
Aircraft General Knowledge
Introduction to Engineering Design Process
Selecting the most promising solution
Prototyping a solution
Evaluating a prototype
Sampling methods and statistical techniques
Basic Principles of Aircraft Flight Performance
Flight Performance and Planning

Part 3: Teaching and learning methods

Teaching and learning methods: This module uses a blend of traditional lectures to introduce and convey concepts and core aerospace knowledge and principles which are consolidated through tutorials and self-paced sessions. In addition to that, basic familiarisation with the university flight simulator is provided, in terms of general handling and flight instruments indication interpretation.

Students will have the opportunity to further consolidate their learning and apply their knowledge and understanding to the hands-on model aircraft design and build activity.

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

MO1 Apply the engineering design process to design, manufacture and evaluate a prototype solution within the aerospace product life cycle (EA1b, D6, P3, P4, G1, G4)

MO2 Apply mathematical and statistical methods within simulation tools in the visualisation, analysis and solution of engineering problems (SM2b, EA1b, D3b, P8)

MO3 Demonstrate knowledge and understanding of aircraft composition and mechanical, hydraulic and electrical systems and the underlying scientific and engineering principles of their operation (SM1b)

MO4 Demonstrate knowledge and understanding of flight performance and planning (SM1b, EA2)

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Computer-based activities = 4 hours

Total = 150

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/B9C0D62B-29E8-6A7C-120C-210D4AF60937.html?lang=en-US&login=1

Part 4: Assessment

Assessment strategy: Component A

Online e-assessment (Pass/Fail)

The assessment strategy is designed to encourage regular engagement with the acquisition of core aerospace knowledge and understanding and assessed through periodic online DEWIS tests. Students will receive unlimited opportunities, but must achieve a pass mark (40%) in each online exam.

Component B

The model aircraft design and build activity is communicated and assessed in the form of a group presentation (Component A) of 30 minutes held at the end of the teaching block and provides the control condition assessment. The presentation assesses that students have a clear understanding of the engineering design process and its application to model aircraft design and build project. The results, analysis and reflection of the project findings will also be assessed.

Peer review will be included within the assessment in accordance with the departmental group work policy.

The resit assessment strategy is the same as the first sit.

Assessment components:

Online Assignment - Component A (First Sit)

Description: e-assessment covering aircraft knowledge, balance and performance (pass/fail)

Weighting:

Final assessment: No

Group work: No

Learning outcomes tested: MO3, MO4

Presentation - Component B (First Sit)

Description: Group presentation for the wing design, manufacture and evaluation of a model fixed wing aircraft.

Weighting: 100 %

Final assessment: Yes
Group work: Yes
Learning outcomes tested: MO1, MO2

Online Assignment - Component A (Resit)
Description: Online tests covering aircraft knowledge, balance and performance (pass/fail)
Weighting:
Final assessment: No
Group work: No
Learning outcomes tested: MO3, MO4

Presentation - Component B (Resit)
Description: Group presentation for the wing design, manufacture and evaluation of a model fixed wing aircraft.
Weighting: 100 %
Final assessment: Yes
Group work: Yes
Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Aerospace Engineering {Apprenticeship-UCW} [UCW] BEng (Hons) 2022-23

Aerospace Engineering [Frenchay] MEng 2022-23

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

Aerospace Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2022-23

Aerospace Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2022-23

Aerospace Engineering [Sep][FT][Frenchay][4yrs] MEng 2022-23

Aerospace Engineering [Sep][SW][Frenchay][5yrs] MEng 2022-23

Aerospace Engineering {Apprenticeship-UWE} [Sep][FT][UCW][4yrs] BEng (Hons) 2022-23

Aerospace Engineering {Apprenticeship-UCW} [Sep][FT][UCW][4yrs] BEng (Hons) 2022-23

Aerospace Engineering {Apprenticeship-UCW} [Sep][FT][UCW][5yrs] BEng (Hons) 2022-23

Aerospace Engineering {Apprenticeship-UCW} [UCW] BEng (Hons) 2022-23

Aerospace Engineering {Apprenticeship-UWE} [UCW] BEng (Hons) 2022-23

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

Aerospace Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2021-22