



Module Specification

Flight

Version: 2021-22, v4.0, 20 Jul 2021

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Part 1: Information

Module title: Flight

Module code: UFMFFK-15-2

Level: Level 5

For implementation from: 2021-22

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: Professional Practice

Pre-requisites: Aerospace Engineering 2020-21, Dynamics Modelling and Simulation 2020-21

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module provides a detailed overview of flight mechanics and dynamics concepts using illustrated practical examples and computational exercises to help reinforce concepts of aircraft performance and stability. Students will also have the opportunity to undertake a flight test course in a real aircraft as well as use flight test data to model aircraft dynamic motion.

Features: Not applicable

Educational aims: Introduce students to the fundamentals of flight performance and stability

Outline syllabus: The module aims to introduce students to the mechanics and stability of flight. The student will be exposed to a number of aspects.

Elements of aircraft performance will be covered including trim, take-off and landing, climb, descent, and level flight.

Principles of aircraft longitudinal and lateral static stability will be covered including weight and balance, neutral point, static margin, effect of elevators including elevator angle to trim and stick force gradients, and stick-fixed versus stick-free static stability.

Principles of aircraft longitudinal and lateral dynamic stability covered including mathematical description, analytical solutions to, and numerical simulations of the primary dynamic modes of an aircraft.

Principles of flight test will be covered including in-flight measurements; post-flight calculations; comparison with theory and flight test.

Part 3: Teaching and learning methods

Teaching and learning methods: The skills acquired by the student are demonstrated within a project based framework. A typical project may for instance be the conceptual design of an aircraft. The students are led through the conceptual design by the teaching team upon which the students can then apply the concepts and taught materials. They will then demonstrate their conformance to the learning outcomes in a portfolio of assessments.

Module Learning outcomes:

MO1 Apply concepts and principles in flight theory to model performance, and to static and dynamic stability of aircraft(SM1b, EA1b, EA2)

MO2 Recognise flight test data collection methods (P8)

MO3 Apply fundamental flight test data processing principles to an aircraft (SM1b, SM2b, P8)

MO4 Use analytical and numerical models to assess the aircraft dynamic flight modes (SM1b, EA1b, EA2, P8)

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 113 hours

Face-to-face learning = 12 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/0EF1C44C-BBCD-7D1A-66EA-79D8EE2E3487.html?draft=1&lang=en-GB&login=1>

Part 4: Assessment

Assessment strategy: Component B:

Component B consists of a portfolio (three or more) of evenly scheduled individual assessments (e.g. Dewis tests) and control conditions assessments (oral examinations up to 15mins), designed to encourage timely engagement with the material and consolidate their understanding of theoretical principles, within the project based framework.

Component A:

The professional body requirement for exposure to flight test measurement methods are performed in this component by attendance of a laboratory.

The resit assessment will replicate the first sit for both components.

Assessment components:

Professional Practice Report - Component A (First Sit)

Description: Exposure to flight test measurement methods measured by laboratory attendance.

Weighting:

Final assessment: No

Group work: No

Learning outcomes tested: MO2

Presentation - Component B (First Sit)

Description: Oral examination (15 minutes per student)

Weighting: 40 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3, MO4

Portfolio - Component B (First Sit)

Description: Portfolio of assessments primarily in the form of online tests

Weighting: 60 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO3, MO4

Professional Practice Report - Component A (Resit)

Description: Exposure to flight test measurement methods measured by laboratory attendance.

Weighting:

Final assessment: No

Group work: No

Learning outcomes tested: MO2

Presentation - Component B (Resit)

Description: Oral examination (15 minutes per student)

Weighting: 40 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3, MO4

Portfolio - Component B (Resit)

Description: Portfolio of assessments primarily in the form of online tests

Weighting: 60 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO3, MO4

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][SW][Frenchay][4yrs] BEng (Hons) 2020-21

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

Aerospace Engineering [Sep][SW][Frenchay][5yrs] MEng 2020-21

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

Aerospace Engineering with Pilot Studies [Sep][SW][Frenchay][4yrs] BEng (Hons)
2020-21

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

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

Aerospace Engineering {Apprenticeship-UCW} [Sep][FT][UCW][4yrs] BEng (Hons)
2020-21

Aerospace Engineering {Apprenticeship-UCW} [Sep][FT][UCW][5yrs] BEng (Hons)
2020-21

Aerospace Engineering {Apprenticeship-UWE} [Sep][FT][UCW][4yrs] BEng (Hons)
2020-21

Aerospace Engineering with Pilot Studies {Foundation} [Sep][FT][Frenchay][4yrs]
BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies {Foundation} [Sep][SW][Frenchay][5yrs]
BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Design) {Foundation}
[Sep][FT][Frenchay][4yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Design) {Foundation}
[Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Manufacturing) {Foundation}
[Sep][FT][Frenchay][4yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Systems) {Foundation}
[Sep][FT][Frenchay][4yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Manufacturing) {Foundation}
[Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Systems) {Foundation}
[Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20

Aerospace Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2019-
20

Aerospace Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-
20

Aerospace Engineering (Design) {Foundation} [Sep][FT][Frenchay][4yrs] BEng
(Hons) 2019-20

Aerospace Engineering (Design) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20

Aerospace Engineering (Manufacturing) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2019-20

Aerospace Engineering (Manufacturing) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20

Aerospace Engineering (Systems) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2019-20

Aerospace Engineering (Systems) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20

Aerospace Engineering (Manufacturing) {Apprenticeship-UCW} [Sep][FT][UCW][5yrs] BEng (Hons) 2019-20

Aerospace Engineering (Systems) [Sep][PT][Frenchay][8yrs] MEng 2018-19

Aerospace Engineering [Sep][PT][UCW][8yrs] MEng 2018-19

Aerospace Engineering with Pilot Studies (Systems) [Sep][PT][Frenchay][6yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Manufacturing) [Sep][PT][Frenchay][6yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Design) [Sep][PT][Frenchay][6yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies [Sep][PT][Frenchay][6yrs] BEng (Hons) 2018-19

Aerospace Engineering (Manufacturing) [Sep][PT][Frenchay][8yrs] MEng 2018-19

Aerospace Engineering [Sep][PT][Frenchay][8yrs] MEng 2018-19

Aerospace Engineering (Design) [Sep][PT][Frenchay][8yrs] MEng 2018-19