



## **Module Specification**

### **Systems Engineering**

Version: 2021-22, v3.0, 26 Apr 2022

#### **Contents**

<b>Module Specification .....</b>	<b>1</b>
<b>Part 1: Information .....</b>	<b>2</b>
<b>Part 2: Description .....</b>	<b>2</b>
<b>Part 3: Teaching and learning methods .....</b>	<b>3</b>
<b>Part 4: Assessment.....</b>	<b>4</b>
<b>Part 5: Contributes towards .....</b>	<b>6</b>

## Part 1: Information

**Module title:** Systems Engineering

**Module code:** UFMFSA-15-3

**Level:** Level 6

**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, Gloucestershire College

**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:** With the increasing complexity of systems formalised approaches to system development are required to ensure compliance with Stakeholder needs. The module is intended to prepare the student for multi-disciplinary projects and the complexity they will encounter as they enter the aerospace sector as graduates.

**Features:** Not applicable

**Educational aims:** See Learning Outcomes

**Outline syllabus:** See educational aims and teaching and learning methods.

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

**Teaching and learning methods:** Large group lecture supported by small group tutorial sessions. Study time outside of contact hours will be spent on private study, on project work and team interactions.

Scheduled learning includes lectures, tutorials and project work.

Independent learning includes hours engaged with essential reading, assignment preparation team interaction, analysis, completion.

Contact Hours:

Contact: 36 hours

Assimilation and skill development: 36 hours

Coursework: 36 hours

Exam preparation: 42 hours

Total: 150 hours

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

**MO1** Show understanding of the differences between a Systems Engineering approach and a non-systems approach to systems design

**MO2** Show a knowledge and understanding of key principles of Requirements driven design

**MO3** Show and understanding of how system interaction leads to emergent properties that may enhance or degrade the containing system's performance

**MO4** Recognise and explain the need for a team approach to system design

**MO5** Develop and knowledge and understanding of a range of decision support tools to inform system design

**MO6** Apply knowledge of identifying customers/stakeholders, eliciting Requirements and translating these into specific, precise and measurable technical Requirements

**MO7** Develop an understanding of the role of modelling in Requirements determination and system design

**MO8** Develop an understanding of Trade Studies and the need for robust optimisation of design options

**MO9** Apply knowledge and experience to investigate and solve problems in system design

**MO10** Show cognitive skills with respect to modelling and simplifying real problems, and applying analytical methods

**MO11** Demonstrate key transferable skills in problem formulation and decision making, evaluating alternate courses of action

**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/ufmfsa-15-3.html) via the following link <https://uwe.rl.talis.com/modules/ufmfsa-15-3.html>

## **Part 4: Assessment**

**Assessment strategy:** Component A:

Assessed via an end of semester Exam to assess the student's understanding of the concepts, techniques and outcomes.

## Component B: Dynamics

Portfolio of project work undertaken by the student working in groups and assessed via a group report and group presentation.

**Assessment components:****Examination (Online) - Component A (First Sit)**

Description: Examination: 5 hours

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO7, MO8

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

Description: Report

Weighting: 25 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO6, MO7, MO8, MO9

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

Description: Group Presentation (30 minutes)

Weighting: 25 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO6, MO7, MO8, MO9

**Examination (Online) - Component A (Resit)**

Description: Examination: 5 hours

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO7, MO8

**Report - Component B (Resit)**

Description: Written report

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO6, MO7, MO8, MO9

**Presentation - Component B (Resit)**

Description: Individual Presentation

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO6, MO7, MO8, MO9

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Electronic and Computer Engineering [Sep][PT][GlosColl][5yrs] BEng (Hons) 2019-20

Electronic and Computer Engineering {Apprenticeship-GLOSCOLL}  
[Sep][FT][GlosColl][5yrs] BEng (Hons) 2019-20

Aerospace Engineering (Systems) [Sep][FT][Frenchay][4yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Design) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Aerospace Engineering (Design) [Sep][FT][Frenchay][4yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Systems) [Sep][FT][Frenchay][4yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Design) [Sep][FT][Frenchay][4yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Systems) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Aerospace Engineering (Design) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Aerospace Engineering (Systems) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Design) {Foundation}  
[Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Systems) [Sep][SW][Frenchay][5yrs]  
MEng 2018-19

Aerospace Engineering with Pilot Studies (Systems) [Sep][SW][Frenchay][4yrs]  
BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Systems) {Foundation}  
[Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Design) [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies (Design) [Sep][SW][Frenchay][5yrs] MEng 2018-19

Aerospace Engineering (Design) [Sep][SW][Frenchay][5yrs] MEng 2018-19

Aerospace Engineering (Systems) [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering (Design) [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering (Design) {Apprenticeship-COBC} [Sep][FT][COBC][4yrs]  
BEng (Hons) 2018-19

Aerospace Engineering (Design) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering (Systems) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering (Systems) [Sep][SW][Frenchay][5yrs] MEng 2018-19

Aerospace Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][4yrs] MEng 2019-20

Aerospace Engineering [Sep][FT][Frenchay][4yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies [Sep][SW][Frenchay][5yrs] MEng 2018-19

Aerospace Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19

Aerospace Engineering with Pilot Studies [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering with Pilot Studies {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Aerospace Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19