Module Specification

Systems Engineering

Version: 2023-24, v5.0, 18 Sep 2023

Contents

Part 1: Information

Module title: Systems Engineering

Module code: UFMFSA-15-3

Level: Level 6

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Engineering

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

Part 4: Assessment

Assessment strategy: The assessment for this module is as follows:

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

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

Resit is the same as the first sit

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

Assessment tasks:

Presentation (First Sit)
Description: Group Presentation (30 minutes)
Weighting: 50 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO6, MO7, MO8, MO9

Examination (Online) (First Sit)
Description: Online Examination: 3 hours + 2 hours for submission
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO7, MO8

Presentation (Resit)
Description: Group Presentation

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

Weighting: 50 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO6, MO7, MO8, MO9

Examination (Online) (Resit)
Description: Online Examination: 3 hours + 2 hours for submission
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO10, MO11, MO2, MO3, MO4, MO5, MO7, MO8

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Aerospace Engineering (Design) {Apprenticeship-UCW} [Sep][FT][UCW] - Not Running[4yrs] BEng (Hons) 2020-21

Aerospace Engineering (Design) [Sep][SW][Frenchay][5yrs] - Not Running MEng 2020-21

Aerospace Engineering (Design) [Sep][SW][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering (Systems) [Sep][SW][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering (Systems) {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering (Design) {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Systems) [Sep][SW][Frenchay][5yrs] - Not Running MEng 2020-21

Aerospace Engineering with Pilot Studies (Design) [Sep][SW][Frenchay][5yrs] - Not Running MEng 2020-21

Aerospace Engineering with Pilot Studies (Systems) [Sep][SW][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Design) [Sep][SW][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Systems) {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies (Design) {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering (Design) {Apprenticeship-COBC} [Sep][FT][COBC][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering (Systems) [Sep][SW][Frenchay][5yrs] - Withdrawn MEng 2020-21

Aerospace Engineering [Sep][PT][Frenchay][8yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Design) [Sep][PT][Frenchay][6yrs] BEng (Hons) 2019-20

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

Aerospace Engineering with Pilot Studies [Sep][PT][Frenchay][6yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Manufacturing) [Sep][PT][Frenchay][6yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Systems) [Sep][PT][Frenchay][6yrs] BEng (Hons) 2019-20

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

Aerospace Engineering (Design) [Sep][PT][Frenchay][8yrs] MEng 2019-20

Aerospace Engineering (Manufacturing) [Sep][PT][Frenchay][8yrs] MEng 2019-20

Aerospace Engineering (Systems) [Sep][PT][Frenchay][8yrs] MEng 2019-20

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

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

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

Aerospace Engineering [Sep][SW][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies [Sep][SW][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Aerospace Engineering with Pilot Studies [Sep][SW][Frenchay][5yrs] - Withdrawn MEng 2020-21

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

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