Module Specification

Systems Engineering

Version: 2021-22, v1.0, 01 Apr 2021

Contents

Part 1: Information

Module title: Systems Engineering

Module code: UFMF9W-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: Gloucestershire College

Delivery locations: 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 engineering sector.

Features: Not applicable

Educational aims: To provide the background necessary to understand multidisciplinary and deeply integrated systems of modern systems engineering applications in, for example, the electronics, vehicle technology and aerospace industries.

Outline syllabus: Topics typically include:

Systems Engineering approach and a non-systems approach to systems design

Key principles of Requirements driven design

Emergent properties that may enhance or degrade the containing system's performance

Decision support tools to inform system design

Identifying customers/stakeholders, eliciting Requirements and translating these into specific, precise and measurable technical Requirements

Problem solving in system design

Part 3: Teaching and learning methods

Teaching and learning methods: Lectorial 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.

Reading Strategy

Module Learning outcomes:

MO1 Describe and explain the differences between a Systems Engineering approach and a non-systems approach to systems design

MO2 Identify systems, customer and stakeholder requirements and translate these into specific, precise and measurable technical requirements.

MO3 Apply modelling techniques and analytical methods to the solution of real engineering problems.

MO4 Investigate and solve problems in system design

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://rl.talis.com/3/uwe/lists/F2147E41-B9FC-2292-0A13-9C8BFD8DF248.html?lang=en-US&login=1

Part 4: Assessment

Assessment strategy: The module is assessed via a portfolio of project work undertaken by the student working in teams as component B. This work is carried out and progressed each week through the module delivery. Component A consists of a group presentation where students can articulate the principles used in their design solution with individual questioning used to assess deeper and specific understanding.

The resit assessment follows a similar format to the first sit assessment strategy, but a scaled down problem is used suitable for individual assessment.

Assessment components:

Presentation - Component A (First Sit)

Description: Group Presentation with individual questioning (30 minutes)

Weighting: 50 %

Final assessment: Yes

Group work: Yes

Learning outcomes tested: MO1, MO3, MO4

Report - Component B (First Sit)

Description: Portfolio of project work (3000 words)

Weighting: 50 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO1, MO2, MO3, MO4

Presentation - Component A (Resit)

Description: Presentation (20 minutes)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3, MO4

Report - Component B (Resit)

Description: Report of project work undertaken (1000 words)

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electronic and Computer Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2020-21