



## MODULE SPECIFICATION

| Part 1: Information       |  |                    |                                     |
|---------------------------|--|--------------------|-------------------------------------|
| Module Title              | Aircraft Systems Integration           |                    |                                     |
| Module Code               | UFMFPH-15-M                            | Level              | Level 7                             |
| For implementation from   | 2019-20                                |                    |                                     |
| UWE Credit Rating         | 15                                     | ECTS Credit Rating | 7.5                                 |
| Faculty                   | Faculty of Environment & Technology    | Field              | Engineering, Design and Mathematics |
| Department                | FET Dept of Engin Design & Mathematics |                    |                                     |
| Module type:              | Project                                |                    |                                     |
| Pre-requisites            | None                                   |                    |                                     |
| Excluded Combinations     | None                                   |                    |                                     |
| Co- requisites            | None                                   |                    |                                     |
| Module Entry requirements | None                                   |                    |                                     |

| Part 2: Description   |
|---|
| <p><b>Educational Aims:</b> See learning outcomes.</p> <p><b>Outline Syllabus:</b> The module aims to provide an advanced study of how best to perform integration of the various components (hardware and software) of an avionics system. The module includes presented material and group project work based on a case study so that students can experience the issues when integrating multiple complex aircraft components.</p> <p>What is integration?</p> <p>The context for integration</p> <p>Why, when and where do we need it?</p> <p>Commercial motivation for sound integration (e.g. early discovery of problems)</p> <p>The cost of bad integration – what can go wrong</p> <p>Case study</p> |

## STUDENT AND ACADEMIC SERVICES

### Interface Leadership:

Identifying the interfaces in a system

Internal and external interfaces

Understanding the system context

Defining the information required for an interface

To ensure all parties have a common understanding

To mitigate the risk of misunderstanding

Identifying the risks, and the mitigation plans

Can we mitigate all risk?

What is the change management plan?

Case study

### Where are the interfaces?

Hardware-hardware, software-software, hardware-software

Internal interfaces and external interfaces

Case study

### Interface definition methods:

Defining interfaces

Formalising interfaces

Case study

### Modelling interface:

Static models

Dynamic models

Linked models

Case study

### Understanding the supply chain from an integration perspective:

What would integration preparation would you expect from a supplier

What integration preparation would you expect to do for your client

Case study

## STUDENT AND ACADEMIC SERVICES

Safety and integration:

Conforming to safety standards

Case study

**Teaching and Learning Methods:** See assessment strategy.

### Part 3: Assessment

The assessment will bring all the concepts together via the case study, which is based on real projects from the organisation. This will include:

Assessing the safety level

Generating an integration strategy and plan

Identifying the main integration risks and mitigation plans

Identifying Deliverables: from suppliers; to the client

It consists of a single submission – maximum 4000 words, comprising:

A group report describing and reflecting on the team coursework performed during and outside scheduled contact periods – maximum 2000 words. This element is expected to pick up on the technical details of the project, as per the learning outcomes

An individual report, reflecting and speculating on the implications of the module content for his/her own experience – maximum 2000 words. This element is expected to focus on the individual's own learning experience, both the technical skills learnt and the team working / business skills required to achieve the project.

This submission will show how well the team worked on the case study to meet the organisation's capability requirements, and providing an individual reflection of the activity for personal career development.

Note: the re-sit submission will consist of an individual reflection. This will be undertaken with respect to a suitable group project report submitted by the rest of the relevant team. It will be a maximum of 4000 words.

| First Sit Components           | Final Assessment | Element weighting | Description  |
|--------------------------------|------------------|-------------------|--|
| Report - Component A           |                  | 50 %              | Group project report                                   |
| Reflective Diary - Component A | ✓                | 50 %              | Individual reflection                                  |
| Resit Components               | Final Assessment | Element weighting | Description  |
| Reflective Diary - Component A | ✓                | 100 %             | Individual reflection based on a suitable group report |

STUDENT AND ACADEMIC SERVICES

| <b>Part 4: Teaching and Learning Methods</b>   |  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
|--|--|---------------------------------|------------------|---|-----|---|-----|---|-----|--|-----|--|-----|--|-----|--|-----|
| Learning Outcomes  | <p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th style="text-align: left;"><b>Module Learning Outcomes</b></th> <th style="text-align: left;"><b>Reference</b></th> </tr> </thead> <tbody> <tr> <td>Explain the integration process and how it fits with the development process, identification of interfaces and risk reduction of integration problems</td> <td>MO1</td> </tr> <tr> <td>Demonstrate an understanding of the various methods available for both modelling and defining interfaces and how they can be applied to a project</td> <td>MO2</td> </tr> <tr> <td>Critically evaluate a proposal for modelling and defining interfaces for the given case study</td> <td>MO3</td> </tr> <tr> <td>Reflect on the impact on integration of any changes in the project and assess the change management plan</td> <td>MO4</td> </tr> <tr> <td>Demonstrate the ability to put integration into the context of the safety requirements for a project and make suitable contributions to any safety assessments</td> <td>MO5</td> </tr> <tr> <td>Provide integration leadership by demonstrating the ability to define an integration strategy and plan, estimate cost and duration, identify risks and create a risk mitigation plan</td> <td>MO6</td> </tr> <tr> <td>Demonstrate an understanding of the supply chain</td> <td>MO7</td> </tr> </tbody> </table> | <b>Module Learning Outcomes</b> | <b>Reference</b> | Explain the integration process and how it fits with the development process, identification of interfaces and risk reduction of integration problems | MO1 | Demonstrate an understanding of the various methods available for both modelling and defining interfaces and how they can be applied to a project | MO2 | Critically evaluate a proposal for modelling and defining interfaces for the given case study | MO3 | Reflect on the impact on integration of any changes in the project and assess the change management plan | MO4 | Demonstrate the ability to put integration into the context of the safety requirements for a project and make suitable contributions to any safety assessments | MO5 | Provide integration leadership by demonstrating the ability to define an integration strategy and plan, estimate cost and duration, identify risks and create a risk mitigation plan | MO6 | Demonstrate an understanding of the supply chain | MO7 |
| <b>Module Learning Outcomes</b>  | <b>Reference</b>   |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Explain the integration process and how it fits with the development process, identification of interfaces and risk reduction of integration problems                                | MO1  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Demonstrate an understanding of the various methods available for both modelling and defining interfaces and how they can be applied to a project                                    | MO2  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Critically evaluate a proposal for modelling and defining interfaces for the given case study  | MO3  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Reflect on the impact on integration of any changes in the project and assess the change management plan   | MO4  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Demonstrate the ability to put integration into the context of the safety requirements for a project and make suitable contributions to any safety assessments                       | MO5  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Provide integration leadership by demonstrating the ability to define an integration strategy and plan, estimate cost and duration, identify risks and create a risk mitigation plan | MO6  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Demonstrate an understanding of the supply chain   | MO7  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Contact Hours  | <table border="1"> <tbody> <tr> <td colspan="2"><b>Independent Study Hours:</b></td> </tr> <tr> <td style="text-align: center;">Independent study/self-guided study</td> <td style="text-align: center;">114</td> </tr> <tr> <td style="text-align: center;"><b>Total Independent Study Hours:</b></td> <td style="text-align: center;">114</td> </tr> <tr> <td colspan="2"><b>Scheduled Learning and Teaching Hours:</b></td> </tr> <tr> <td style="text-align: center;">Face-to-face learning</td> <td style="text-align: center;">36</td> </tr> <tr> <td style="text-align: center;"><b>Total Scheduled Learning and Teaching Hours:</b></td> <td style="text-align: center;">36</td> </tr> <tr> <td><b>Hours to be allocated</b></td> <td style="text-align: center;">150</td> </tr> <tr> <td><b>Allocated Hours</b></td> <td style="text-align: center;">150</td> </tr> </tbody> </table>   | <b>Independent Study Hours:</b> |                  | Independent study/self-guided study   | 114 | <b>Total Independent Study Hours:</b>   | 114 | <b>Scheduled Learning and Teaching Hours:</b>   |     | Face-to-face learning  | 36  | <b>Total Scheduled Learning and Teaching Hours:</b>  | 36  | <b>Hours to be allocated</b>   | 150 | <b>Allocated Hours</b>                           | 150 |
| <b>Independent Study Hours:</b>  |  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Independent study/self-guided study  | 114  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| <b>Total Independent Study Hours:</b>  | 114  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| <b>Scheduled Learning and Teaching Hours:</b>  |  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Face-to-face learning  | 36   |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| <b>Total Scheduled Learning and Teaching Hours:</b>  | 36   |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| <b>Hours to be allocated</b>   | 150  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| <b>Allocated Hours</b>   | 150  |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |
| Reading List   | <p>The reading list for this module can be accessed via the following link:<br/> <a href="https://uwe.rl.talis.com/modules/ufmfph-15-m.html">https://uwe.rl.talis.com/modules/ufmfph-15-m.html</a></p>   |                                 |                  |   |     |   |     |   |     |  |     |  |     |  |     |  |     |

| <b>Part 5: Contributes Towards</b>                                 |
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| This module contributes towards the following programmes of study: |