



## MODULE SPECIFICATION

| Part 1: Information       |  |                    |                                     |
|---------------------------|--|--------------------|-------------------------------------|
| Module Title              | Vibrational Dynamics                   |                    |                                     |
| Module Code               | UFMFJ-15-3                             | Level              | Level 6                             |
| For implementation from   | 2020-21                                |                    |                                     |
| 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:              | Standard                               |                    |                                     |
| Pre-requisites            | Dynamics 2020-21                       |                    |                                     |
| 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> Review of single free, forced, damped and undamped Single DOF systems</p> <p>Response to certain non-periodic forcing functions<br/>           Response to periodic forcing functions<br/>           Review of unforced multi-degree-of-freedom systems<br/>           Analysis of forced multi-degree-of-freedom using modal analysis<br/>           Analysis of non-linear systems using energy methods<br/>           Introduction to random vibration</p> <p><b>Teaching and Learning Methods:</b> Large group teaching session supported by small group tutorial sessions. Study time outside of contact hours will be spent on going through new material (via notes and videos), exercises and example problems. The learning on the module is strongly supported by the use of technology and students are encouraged to engage in this material both prior to and after class contact sessions.</p> <p>Scheduled learning includes teaching sessions and tutorials.</p> |

## STUDENT AND ACADEMIC SERVICES

Independent learning includes hours engaged with essential reading and assessment preparation. These sessions constitute an average time per level as indicated in the table below. Scheduled sessions may vary slightly depending on the module choices you make.

Student contact time: 36 hours  
 Directed learning: 48 hours  
 Self-directed learning: 42 hours  
 Exam preparation: 67 hours  
 TOTAL: 150 Hours

### Part 3: Assessment

#### Component A

The interactive style of delivery leads to students receiving frequent formative feedback on their progress and hence students should be well prepared for the end of module assessment which takes the form of a written examination. E-quizzes taken in each week are an additional means of ensuring engagement in delivery.

| First Sit Components               | Final Assessment | Element weighting | Description                        |
|------------------------------------|------------------|-------------------|------------------------------------|
| Examination (Online) - Component A | ✓                | 80 %              | End of semester online examination |
| In-class test - Component B        |                  | 20 %              | E-quizzes                          |
| Resit Components                   | Final Assessment | Element weighting | Description                        |
| Examination (Online) - Component A | ✓                | 80 %              | Online Examination                 |
| In-class test - Component B        |                  | 20 %              | E-quizzes                          |

### Part 4: Teaching and Learning Methods

Learning Outcomes On successful completion of this module students will achieve the following learning outcomes:

| Module Learning Outcomes   | Reference |
|--|-----------|
| Demonstrate knowledge of scientific principles and methods necessary to underpin their education in mechanical and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies. | MO1       |
| Demonstrate knowledge of mathematical principles necessary to underpin their education in mechanical and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.                | MO2       |
| Apply and integrate knowledge of other engineering disciplines to support the study of mechanical and related engineering disciplines  | MO3       |
| Use engineering principles and apply them to analyse key engineering processes.  | MO4       |
| Identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques   | MO5       |
| Apply quantitative methods to mechanical and related engineering disciplines, to solve engineering problems  | MO6       |
| Demonstrate an ability to apply a systems approach to engineering problems   | MO7       |

## STUDENT AND ACADEMIC SERVICES

|               |  |     |
|---------------|--|-----|
| Contact Hours | <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:</p> <p><a href="https://uwe.rl.talis.com/modules/ufmfxj-15-3.html">https://uwe.rl.talis.com/modules/ufmfxj-15-3.html</a></p> |     |

### Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Automotive Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19

Automotive Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19

Mechanical Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19

Mechanical Engineering [Sep][FT][Frenchay][3yrs] BEng 2018-19