



Module Specification

Vibrational Dynamics

Version: 2021-22, v3.0, 17 Feb 2022

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Part 1: Information

Module title: Vibrational Dynamics

Module code: UFMFXJ-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, Global College of Engineering and Technology (GCET)

Field: Engineering, Design and Mathematics

Module type: Standard

Pre-requisites: Dynamics 2021-22

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: Review of single free, forced, damped and undamped Single DOF systems

Response to certain non-periodic forcing functions

Response to periodic forcing functions

Review of unforced multi-degree-of-freedom systems

Analysis of forced multi-degree-of-freedom using modal analysis

Analysis of non-linear systems using energy methods

Introduction to random vibration

Part 3: Teaching and learning methods

Teaching and learning methods: 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.

Scheduled learning includes teaching sessions and tutorials.

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

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

MO1 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.

MO2 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.

MO3 Apply and integrate knowledge of other engineering disciplines to support the study of mechanical and related engineering disciplines

MO4 Use engineering principles and apply them to analyse key engineering processes.

MO5 Identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques

MO6 Apply quantitative methods to mechanical and related engineering disciplines, to solve engineering problems

MO7 Demonstrate an ability to apply a systems approach to engineering problems

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

Part 4: Assessment

Assessment strategy: 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.

The GCET delivery of this exam is a 3 hour face-to-face/invigilated exam. It was agreed that GCET can deliver the exam in a different way to UWE for in-country reasons for 2021/22 and 2022/23 providing there is no change to the UWE assessment during this time.

Assessment components:

Examination (Online) - Component A (First Sit)

Description: End of semester online examination: 5 hours

Weighting: 80 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7

In-class test - Component B (First Sit)

Description: E-quizzes

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6, MO7

Examination (Online) - Component A (Resit)

Description: Online Examination: 5 hours

Weighting: 80 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

In-class test - Component B (Resit)

Description: E-quizzes

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

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

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

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

Mechanical Engineering and Vehicle Technology {Foundation}

[Feb][FT][GCET][4yrs] BEng (Hons) 2018-19

Mechanical Engineering and Vehicle Technology {Foundation} [Oct][FT][GCET][4yrs]
BEng (Hons) 2018-19

Automotive Engineering {Foundation} [Sep][FT][Frenchay][5yrs] MEng 2018-19

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

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

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

Mechanical Engineering {Foundation} [Sep][FT][Frenchay][5yrs] MEng 2018-19

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

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

