Module Specification

Dynamics

Version: 2025-26, v6.0, Approved

Contents

Part 1: Information

Module title: Dynamics

Module code: UFMFL8-15-2

Level: Level 5

For implementation from: 2025-26

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: Dynamics Modelling and Simulation 2024-25

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module seeks to instil a confident understanding of the discipline and will build upon the fundamentals of dynamics and modelling presented in Level 4, with the underpinning mathematical methods and software tools supporting the content being taught concurrently. The philosophy is to teach the mathematical methods in an engineering context to increase motivation and confidence in application. The focus at this level is to use a variety of real-life authentic applications and problems as vehicles to support the delivery of the technical and

mathematical content. Students spend some of the module working on laboratory exercises in groups to allow them to share and discuss any aspects or challenges that the module may bring to light.

Features: Not applicable

Educational aims: The aim of this module is to build on the technical knowledge and understanding of dynamics introduced at level 4 and introduce a wider range of engineering contexts to illustrate and motivate the engineering analysis.

Outline syllabus: Methods of differential equations for dynamics.
Free oscillation.
Forcing and damping.
Transmissibility.
Multiple degree of freedom oscillators
Vibration measurement.

Part 3: Teaching and learning methods

Teaching and learning methods: Large group lecture supported by small group tutorial/laboratory sessions where students work on problems that link the abstract theoretical concepts and techniques to real engineering tasks.

Study time outside of contact hours will be spent on going through exercises and example problems and analysing experimental data from the laboratory settings.

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

MO1 Apply a range of relevant theoretical and computational methods to model dynamical behaviour of bodies oscillating with one or more degrees of freedom.

MO2 Apply experimental procedures to understand and analyse dynamical systems and numerically evaluate experimental results with reference to measurement uncertainties.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

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/ufmfl8-15-2.html

Part 4: Assessment

Assessment strategy: Via an online end-of-module exam. A large part of the exam will focus on questions about the practical sessions such as relating the results to theory and discussing uncertainties. The remainder of the exam will assess wider understanding of the module syllabus.

Assessment tasks:

Examination (Online) (First Sit)
Description: Online exam: 3 hours (+ 2 for scanning and upload).
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Examination (Online) (Resit)
Description: Online exam: 3 hours (+ 2 for scanning and upload).
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Mechanical Engineering [Frenchay] BEng (Hons) 2023-24

Mechanical Engineering [Frenchay] MEng 2023-24

Mechanical Engineering {Apprenticeship-UCW} [UCW] FdSc 2023-24

Mechanical Engineering {Apprenticeship-UCS} [UCS] WITHDRAWN FdSc 2023-24

Automotive Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Mechanical Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Mechanical Engineering [Frenchay] BEng (Hons) 2024-25

Mechanical Engineering [Frenchay] MEng 2024-25

Mechanical Engineering {Apprenticeship-GlosColl} [GlosColl] FdSc 2024-25

Automotive Engineering [Frenchay] BEng (Hons) 2024-25

Automotive Engineering [Frenchay] MEng 2024-25

Automotive Engineering [Frenchay] - Withdrawn MEng 2024-25

Automotive Engineering [Frenchay] BEng (Hons) 2024-25

Automotive Engineering {Foundation} [Frenchay] BEng (Hons) 2023-24

Mechanical Engineering and Technology {Foundation} [GCET] BEng (Hons) 2023-24

Mechanical Engineering and Technology (Mechatronics) {Foundation} [GCET] BEng (Hons) 2023-24

Mechanical Engineering (Manufacturing) [BIET] BEng (Hons) 2025-26

Mechanical Engineering (Mechatronics) [AustonSingapore] WITHDRAWN BEng (Hons) 2025-26

Mechanical Engineering (Mechatronics) [BIET] BEng (Hons) 2025-26

Mechanical Engineering (Manufacturing) [AustonSingapore] BEng (Hons) 2025-26

Mechanical Engineering [Frenchay] MEng 2023-24

Mechanical Engineering [Frenchay] MEng 2024-25

Mechanical Engineering and Technology {Foundation} [GCET] BEng (Hons) 2023-24

Mechanical Engineering and Technology (Vehicle Technology) {Foundation} [GCET] BEng (Hons) 2023-24

Mechanical Engineering and Technology (Mechatronics) {Foundation} [GCET] BEng (Hons) 2023-24

Mechanical Engineering and Technology (Mechatronics) {Foundation} [GCET] DipHE 2023-24

Mechanical Engineering and Technology (Vehicle Technology) {Foundation} [GCET] DipHE 2023-24

Mechanical Engineering and Technology {Foundation} [GCET] DipHE 2023-24