MODULE SPECIFICATION

Part 1: Information			
Module Title	Dynamics (PBL)		
Module Code	UFMFLP-15-2	Level	Level 5
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:	Standard		
Pre-requisites	Engineering Mathematics 2019-20		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

Educational Aims: An understanding of dynamic behaviour is an essential key element in the makeup of a good Engineer. This module seeks to instil a confident understanding of the discipline to build upon the basics introduced in level one. This will be achieved through strongly context based learning.

Outline Syllabus: Revision basic dynamics, rigid body motion, vector methods, single dof free vibration.

Vibration – undamped single d.o.f. forced vibration

Damping and its effect in 1 d.o.f. systems

Forced oscillation

Introduction to 2 d.o.f. systems

Principles of vibration measurement

1-d wave equation

Mechanisms (open and closed) – four bar linkage

Vector analysis of mechanisms for position, velocity and acceleration

Crank-slider mechanisms

Teaching and Learning Methods: The problem based learning strategy adopted in this module will introduce students to the modelling and analysis of systems exhibiting Dynamic behaviours. This will be done through the adoption of heavily contextualised and relevant examples. This will motivate students to understand theoretical principles and concepts as practising engineers. At the same time students will be able to demonstrate understanding of the material and be able to apply the methods and techniques in a variety of contexts.

Part 3: Assessment

The Assessment Strategy is to introduce project / application based learning and assessment into the module through the traditional platform of both project / application based examination and coursework, as detailed below.

Component A: 2 hour examination will assess a mixture of questions involving underlying principles and applications under controlled conditions.

Component B: A portfolio of project based assessments that cover a range of tasks of approximately 2000 words or equivalent.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		25 %	A portfolio of project based assessment of 2000 words or equivalent
Examination - Component A	✓	75 %	End of semester exam (2 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		25 %	A portfolio of project based assessments of 2000 words or equivalent
Examination - Component A	✓	75 %	Exam (2 hours)

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**
Understand the principles and methods used in the study and analysis of dynamic behaviour, mechanical vibrations and mechanisms	MO1
Demonstrate an understanding and knowledge of the key mathematical principles needed to properly analyse dynamic vibrations and systems	MO2
Identify and describe the performance of dynamic systems using analytical methods and modelling tools	MO3
Demonstrate the ability to apply appropriate theoretical and practical methods to the analysis and solution of laboratory based problems	MO4
Show cognitive skills with respect to modelling and simplifying real problems, and applying mathematical methods of analysis	MO5

	Demonstrate skills in problem formulation and decision making, interpreting experimental results.	MO6

Contact Hours		
	Independent Study Hours:	
	Independent study/self-guided study	114
	Total Independent Study Hours:	114
	Scheduled Learning and Teaching Hours:	
	Face-to-face learning	36
	Total Scheduled Learning and Teaching Hours:	36
	Hours to be allocated	150
	Allocated Hours	150

Reading List	
	The reading list for this module can be accessed via the following link: https://uwe.rl.talis.com/modules/ufmflp-15-2.html

Part 5: Contributes Towards
This module contributes towards the following programmes of study: Automotive Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19 Automotive Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19 Automotive Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19 Automotive Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19