

Module Specification

Module Summary Information

1	Module Title	Dynamics and Control
2	Module Credits	20
3	Module Level	6
4	Module Code	ENG6074

5	Module Overview
<p>The module introduces you to the mathematical tools underpinning the analysis, modelling and design of complex vibrating systems and mechanisms as well as the software tools within an appropriate simulation environment used for their solution. Industry standard software will also be used for the design of dynamical control systems using both time and frequency domain techniques.</p> <p>Teaching and assessment will comprise not only traditional lectures/tutorials, but also use of industry standard software for the purposes of mathematical modelling, all of which are assessed by examination.</p>	

6	Indicative Content
<p>Block Diagrams and Feedback, DC Motors, Kinematics, Space diagram, Transient Specifications, D'Alembert's Principle, Free and Forced Vibration, Steady State-Type 0 and 1 Systems, Suspension systems, Routh Stability, Two degrees of freedom, Frequency Response, Beam vibrations, Root Locus.</p>	

7	Module Learning Outcomes
On successful completion of the module, students will be able to:	
1	Solve kinematics problems using the space diagram technique.
2	Model and solve 1D and 2D forced vibration problems by a variety of methods.
3	Regulate steady-state performance of a system using proportional and integral controllers.
4	Stabilise system oscillations using frequency response and pole placement techniques.

8	Module Assessment		
Learning Outcome			
	Coursework	Exam	In-Person
1-4		100%	

9 Breakdown Learning and Teaching Activities	
Learning Activities	Hours
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable	48
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE	0
Private Study (PS) includes preparation for exams	152
Total Study Hours:	200