

## MODULE DESCRIPTOR

<b>MODULE TITLE</b>	MECHANICS		
<b>MODULE CODE</b>	AP1842 (L4)	<b>CREDIT VALUE</b>	20 UK CREDITS / 10 ECTS
<b>SCHOOL</b>	SCHOOL OF SCIENCES		

### MODULE AIMS

To provide a basic introduction to Mechanics including the presentation of Newton's laws of motion and the application of these, and their consequences, to simple configurations.

### MODULE CONTENT

**Indicative syllabus content:**

- Units, dimensions
- Kinematics in one and two dimension
- Forces
- Work and power
- Energy
- Impulse and momentum
- Dynamics, Newton's Laws of motion
- Interactions
- First order dynamic behaviour: Mathematical methods and applications
- Second order dynamic behaviour: Mathematical methods and applications
- Simple Harmonic Motion
- Kinematics in two dimensions
- Oscillations & Resonance
- Rotational Motion
- Equilibrium
- Planetary orbits and Newton's gravitational law, Kepler's Laws

### INTENDED LEARNING OUTCOMES

**On successful completion of this module a student will be able to:**

1. Describe and apply the concepts of mechanics.
2. Mathematically derive certain standard results based on the laws of mechanics covered.
3. Solve theoretical problems relating to material, including new situations.
4. Recognise and solve various types of 1st order differential equations, including some which require transformation to standard forms
5. Recognise and solve 2nd order, linear, constant coefficient differential equations.

### TEACHING METHODS

The class contact will consist of lectures together with tutorials. Lectures will introduce the theory and provide examples of its application. Key elements of the learning strategy are regular worksheets in which students are encouraged to practice their Physical problem solving and mathematical techniques. These will be discussed in the tutorials.

### ASSESSMENT METHODS

This module is assessed through a Portfolio of assessment questions and an examination.