



<b>Course Code</b> PHYS-140	<b>Course Title</b> General Physics	<b>ECTS Credits</b> 6
<b>Prerequisites</b> None	<b>Department</b> Engineering	<b>Semester</b> Fall, Spring
<b>Type of Course</b> Required	<b>Field</b> Science	<b>Language of Instruction</b> English
<b>Level of Course</b> 1 <sup>st</sup> Cycle	<b>Lecturer(s)</b> Dr Marios Nestoros	<b>Year of Study</b> 1 <sup>st</sup>
<b>Mode of Delivery</b> Face-to-face	<b>Work Placement</b> N/A	<b>Co-requisites</b> MATH-190

### Objectives of the Course:

The main objectives of the course are to:

- Introduce students to the basic concepts of mechanics.
- Help students develop an understanding of the principles taught as well as analytical problem-solving ability.
- Consolidate the basic principles discussed in the theoretical section of the course with laboratory experiments and computer applets/simulations

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Assign the correct units of measurement to physical quantities and convert from one unit of measurement to another.
2. Perform addition, subtraction, dot and cross multiplication with vectors.
3. Analyze the motion of a particle in one and two dimensions using the quantities of velocity, acceleration and displacement.
4. Apply Newton's Laws of motion to solve problems.
5. Apply the principles of conservation of energy and linear momentum to solve problems.
6. Investigate experimentally the above laws and principles.

### Course Contents:

#### Lectures

1. Scientific Method, Fundamental Units and Measurement, Vectors
2. Motion in one and two dimensions (displacement, velocity, acceleration).
3. Force and Motion, Friction, Drag force

4. Work and Kinetic Energy Theorem, Potential Energy, Mechanical Energy, Conservation of Mechanical Energy.
5. Motion of a System of particles, Center of Mass & Linear Momentum Conservation
6. Torque & Rotational Motion

Experiments and Simulations:

Selection of Experiments and simulations from: free fall, projectile motion, Newton's Laws of Motion, statics and elasticity, conservation of mechanical energy, conservation of momentum

**Learning Activities and Teaching Methods:**

Lectures; Experiments, Simulations

**Assessment Methods:**

Midterm Test, Homework, Lab Work, Final Examination

**Required Textbooks / Reading:**

Title	Author(s)	Publisher	Year	ISBN
Fundamentals of Physics	Halliday, Resnick, Walker	Wiley	10 <sup>th</sup> Edition	9781118886328

**Recommended Textbooks / Reading:**

Title	Author(s)	Publisher	Year	ISBN
Mechanics <a href="http://www.lightandmatter.com/">http://www.lightandmatter.com/</a>	Ben Crowell			