

Planning and Quality Assurance Affairs

Form (A)

**Course Specifications**

**General Information**

<b>Course name</b>	Classical Mechanics(1)
<b>Course number</b>	PHYS2308
<b>Faculty</b>	
<b>Department</b>	
<b>Course type</b>	College Needs
<b>Course level</b>	2
<b>Credit hours (theoretical)</b>	3
<b>Credit hours (practical)</b>	0
<b>Course Prerequisites</b>	

**Course Objectives**

- 1 - o demonstrate knowledge and understanding of the following fundamental concepts in : Newtonian mechanics in one dimension . Oscillations . General motion of a particle in three dimensions . Newton's law of motion in non-inertial frames of reference . Particle motion under central forces . The dynamics of systems of particles . Lagrangian and Hamiltonian formulation of mechanics .
- 2 - To apply the familiar techniques, based on Newton's laws, to systems in a variety of coordinate systems and references frames

**Intended Learning Outcomes**

<b>Knowledge and Understanding</b>	<ul style="list-style-type: none"> <li>* Demonstrate knowledge of core principles in mechanics;</li> <li>* Understand and answer problems on damped and forced oscillatory systems, and simple coupled systems ;</li> </ul>
<b>Intellectual Skills</b>	<ul style="list-style-type: none"> <li>* Understand the principles of Newtonian mechanics and have a working knowledge of its application;</li> <li>* Demonstrate a working knowledge of classical mechanics and its application to standard problems such as central forces;</li> </ul>

**Course Contents**

- 1 - Fundamental Concepts: Vector
- 2 - Newtonian Mechanics in One Dimension
- 3 - Oscillations
- 4 - General Motion of a Particle in Three Dimensions
- 5 - Gravitation and Central Forces

**Teaching and Learning Methods**

- 1 - lecturing and homeworks

## Students Assessment

<u>Assessment Method</u>	<u>TIME</u>	<u>MARKS</u>
Midterms	60 minute each	40
attendance		10

## Books and References

Essential books	K. R. Symon, "Mechanics", 3rd ed. K. R. Symon, "Mechanics", 3 ed. , Addison-Wesley, 1971
Recommended books	J.B. Marion and S.T. Thornton , "Classical Dynamics of Particles and Systems" 5th ed. ,2003 – standard undergraduate introductory textbook . Grant R. Fowles, George L. Cassiday, "Analytical Mechanics", 7th ed. , Thomson Brooks/Cole, 2005 .