Pandit Deendayal Petroleum University **School of Liberal Studies**

16BSP101					University Physics-I					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	3	3	25	50	25	--	--	100

COURSE OBJECTIVES

- **T**o acquire the basic knowledge of inadequacies of classical physics & other concepts of modern physics
- To understand and analyze the motion of the particle under central forces.
- To demonstrate the basic understanding of kinematics and dynamics.
- To explain the basic concepts of waves and heat.

UNIT 1 Introduction to Physical Science	**12 Hrs.**
Introduction to various branches of Physics, Fundamental laws of classical and quantum physics, Failures of classical Physics: Ultraviolet catastrophe, Photoelectric effect, Compton effect, atomic spectra, Introduction to LASER and its applications, brief introduction of semiconductor physics, general rules for scalars and vectors, vector algebra.	
UNIT 2 Motion under forces	**08 Hrs.**
Kinematics, Newton's laws and applications, One, two and three dimensional motion under forces, Work, friction, energy, power, momentum, examples and applications.	
UNIT 3 Rotational Kinematics and dynamics	**10 Hrs.**
Centre of mass, conservation law: force and energy, non-conservative forces and energy dissipation, Rotational Kinematics, dynamics and statics, torque, angular momentum, moments, Simple Harmonic Motion-force and energy.	
UNIT 4 Basic concepts of waves and heat	**10 Hrs.**
Introduction to waves, Description of Wave motion, types of waves: mechanical, electromagnetic, matter and standing, wave propagation in a medium, Concept of heat and temperature, Kinetic theory of gases, ideal gas laws, mode of heat transfer, specific heat, concept of entropy.	
Max. 40 Hrs	

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - identify and understand the experimental results incompatible with classical physics and introduce concepts of quantum theory.

CO2- understand the important concepts of modern physics.

CO3- demonstrate an ability to identify and analyze various motion under central forces.

CO4- apply basic laws of kinematics and dynamics to various motions.

CO5- understand underlying principles of physics for waves and heat.

CO6 - solve the numerical based on the various concepts of physics.

TEXT/REFERENCE BOOKS

1. Resnick, Halliday and Krane, Physics part I and II, 5th Edition John Wiely (2002).
2. Mechanics by D. S. Mathur (S Chand & Co. Ltd., N Delhi, 2006).
3. Heat and Thermodynamics by Brij lal and N Subramaniyam, (S Chand & Co.Ltd, New Delhi).
4. Concepts of Physics by H.C Verma Vol-I and II, Bharati Bhawan Publishers.
5. Concepts of Modern Physics by Arthur Beiser.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100 **Exam Duration: 3 Hrs**

Part A/Question: <Details> **<> Marks**

Part B/Question: <Details> **<> Marks**