

Syllabus of Scheme III

S. Y. B. Sc. Physics Minor

(Semester- III)

Name of the Course: Physics Minor Course 1
Mechanics (2 Credits)

Sr. No.	Heading	Particulars
1.	Description the course: (Including but not limited to)	Introduction, relevance, Usefulness, Application, interest, connection with other courses, demand in the industry, job prospects etc.
2.	Vertical:	Major / <u>Minor</u> / Open Elective / Skill Enhancement / Ability Enhancement / Indian Knowledge System
3.	Type:	Theory
4.	Credit:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5.	Hours Allotted:	30 Hours
6.	Marks Allotted:	50 Marks
7.	Course Objectives: The students are expected to:	
	CO 1	understanding of kinetic energy, conservative and non - conservative forces
	CO 2	to explore concept of Collision (Elastic and Inelastic collision) and Gravitational potential energy.
	CO 3	demonstration of Mechanical systems
8.	Course Outcomes: On successful completion of this course students will be able to:	
	OC 1	understand the concepts of mechanics & properties of matter & to apply them to solve problems.
	OC 2	comprehend work and energy equivalence and its applications through suitable numerical.
	OC 3	demonstrate quantitative problem-solving skills in all the topics covered
9.	Modules / Units: - There will be One module / Unit Per Credit	
	Module / Unit - I: Mechanics of Energy and forces (15 Lectures)	
	i) Work done by constant force, work done by variable force, Kinetic energy and work-kinetic energy theorem, Power, Potential energy, conservative and non - conservative forces, Conservative Forces and Potential Energy, Conservation of Mechanical Energy, Work Done by Nonconservative Forces, Relationship Between Conservative Forces and Potential Energy, Conservation of Energy in General, Mass–Energy Equivalence, Quantization of Energy	
	ii) Equivalence of Shear strain to compression and extension strains, Relations between elastic constants, Energy stored in a strained body, couple for twist in cylinder.	
	Module / Unit-II: Mechanics of Collisions, Elasticity & Gravitation 15 Lectures)	
	i) Centre of mass, Motion of system of particles, Conservation of Momentum for a Two-Particle System, Concept of Angular momentum of a particle, Angular momentum for many particles system, Angular momentum of a rotating rigid body, angular momentum conservation	
	ii) Impulse and momentum, Collisions, Elastic and Non- elastic collisions in one dimension	
	iii) Gravitational potential energy, gravitational potential, calculation of gravitational potential, calculation of gravitational field, inertial and gravitational mass.	

10.	Reference Books: 1. HRW: Fundamental of Physics Halliday, Resnick and Walker and Krane 9th Edition 2. HCV: H.C. Verma, Concepts of Physics-Part I (Second Reprint of 2020) Bharati Bhavan Publishers and Distributors 3. HP: H. S. Hans and S. P. Puri, Mechanics, 2nd ed, Tata McGraw Hill.	
	Additional Reference Books: 1. Theoretical Mechanics, M.R. Spiegel, 2006, Tata McGraw Hill. 2. Mechanics, D.S. Mathur, S. Chand and Company Limited, 2000	
11.	Individual Passing in Internal and External Examination	
12.	Internal Continuous Assessment (40%) (20 Marks)	External Assessment, (60%) (30 Marks)
	Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc. (at least 3)	Evaluation: through Exam at the End of the Semester / Term.
13.	Format of Question Paper for Physics Minor Term End Examination for 30 Marks: Duration of the Term End Examination: One Hour	
	Unit - I (15 Marks)	Q.1 A) Attempt any Two 10 Marks i) Theory ii) Theory iii) Theory iv) Theory B) Attempt any One 05 Marks i) Problem / Theory ii) Problem
	Unit – II (15 Marks)	Q.2 A) Attempt any Two 10 Marks i) Theory ii) Theory iii) Theory iv) Theory B) Attempt any One 05 Marks i) Problem / Theory ii) Problem

Name of the course: Physics Minor Practical Course –USPHMNP1 (MN - I)

Sr. No.	Heading	Particulars
1.	Description the course: (Including but not limited to)	Introduction, Relevance, Usefulness, Application, Interest, Connection with other courses, Demand in the Industry, Job Prospects etc.
2.	Vertical:	Major / <u>Minor</u> / Open Elective / Skill Enhancement / Ability Enhancement / Indian Knowledge System
3.	Type:	Practical
4.	Credits:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a Semester)
5.	Hours	60 Hours
6.	Marks Allotted:	50 Marks
7.	Course Objectives (CO): The students are expected to:	
	CO 1	learn the skills while performing experiments.