



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Science

Department of Physics

Choice Based Credit System (CBCS)

B. Sc. III Sem

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CR EDI TS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
	VC (Vocational Course)	Laboratory Techniques in Physics	00	00	00	60	40	2	0	4	4

Course Objectives	<ol style="list-style-type: none"> To develop the comprehensive understanding of laws of physics related to General properties of Matter and ability to apply them for laying the foundation for research and development. To work ethically as member as well as leader in a diverse team.
Course Outcomes	<ol style="list-style-type: none"> Student will be able to understand and solve the problems related to General Properties of Matter. Student will be able to determine physical parameter experimentally with optimal usage of resources and complete the assignments in time.

Abbreviation		Teacher Assessment (Theory) shall be based on following components: Quiz / Assignment / Project / Participation in class (Given that no component shall be exceed 10 Marks).
Th	Theory	
T	Tutorial	
P	Practical	

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BSPH: Laboratory Techniques in Physics

UNIT I: THEORY: ROTATIONAL DYNAMICS AND ELASTICITY

Centre of mass for a system of particles, system of n particles and examples, Theorem of parallel axis, theorem of perpendicular axis.

Elasticity, Stress and Strain; Hook's law, Young's modulus, Young's Modulus by Searl's method

Modulus of rigidity, Poission's ratio, Cantilever, transverse oscillations of a cantilever, torsion of cylinder.

UNIT II: THEORY: OSCILLATIONS AND FLUID MECHANICS

Simple Harmonic Oscillations, Differential equation of SHM, Gravitational Acceleration, motion of simple pendulum, motion of compound pendulum, motion of mass connected with spring, motion of torsional pendulum.

Idea of Viscosity, Ideal and Viscous fluid, Streamline and Turbulent flow, Reynold's number Coefficient of viscosity, Stokes law, Poiseulle's formula, Intermolecular forces-cohesive and adhesive forces, Surface tension, Jaeger's method,

UNIT III: EXPERIMENTS: ROTATIONAL DYNAMICS AND ELASTICITY

1. To verify laws of Perpendicular axes for moment of inertia.
2. To determine Young's Modulus of long wire by Searl's method.
3. To determine Young's Modulus using Cantilever method.
4. To determine Poisson's ratio of rubber tube.

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UNIT IV: EXPERIMENTS: OSCILLATIONS

1. To determine Acceleration due to gravity using compound pendulum
2. To determine Modulus of rigidity by Torsional pendulum.
3. To determine the force constant of the given spring in parallel combination.

UNIT V: EXPERIMENTS: FLUID MECHANICS

1. To determine Coefficient of Viscosity of fluid using Stoke's law.
2. To determine Surface Tension by Jaeger's method.
3. To determine Coefficient of Viscosity of fluid using Poiseuille's method.

References

1. D. S. Mathur, *Elements of Properties of Matter*, S. Chand & Co., 1962.
2. C. Kittel, W. D. Knight and M. A. Ruderman, *Mechanics, Berkeley Physics Course*, Vol. 1, 2nd Edition, McGraw-Hill Book Company, 1973.
3. Halliday and Resnick, *Fundamentals of Physics*, 10th Edition, John Wiley & Sons, 2014.
4. H. D. young, R. A. Freedman, R. Bhathal and A. L. ford, *Sears and Zemansky's University Physics with Modern Physics*, 1st Australian SI Edition, Pearson Education Inc, 2011.

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