

Programme/Class: PG		Year: I	Semester: First/Second
Subject: Physics (Minor Elective Paper)			
Course Code: PHY101T (M)		Course Title: Basics of Heat and Electricity	
Course Outcomes (COs)			
After going through the course, the student should be able to			
<ol style="list-style-type: none"> Learn the basic concepts of Mean speed, Root mean square speed and Most probable speed, Mean free path of molecules of gas. Know the Maxwell's law of distribution of molecular Speed Understand methods of heat transfer. Learn . Coulomb's law and its application. Understand Ohm's law and its uses. 			
Credits: 4		Core : Elective	
Max. Marks: 25+75		Min. Passing Marks: 33 (for PG students of other faculty)	
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: 4-0-0			
Unit	Topics		No. of Lectures
I	Kinetic Theory of Gases Maxwell's law of distribution of molecular Speed (No derivation), Mean speed, Root mean square speed and Most probable speed, Mean free path, Law of equipartition of energy (no derivation) and its applications to specific heat of gases; mono-atomic and diatomic gases		15
II	Thermal Properties of Matter Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv , change of state - latent heat capacity. Heat transfer-conduction, convection and radiation (Qualitative).		15
III	Electrostatics Electric charges; conservation and quantization of charge, Coulomb's law;. Electric field, electric field due to a point charge, electric field lines, Electrostatic Potential, Potential Energy.		15
IV	Current Electricity Mechanism of flow of current in conductors. Mobility, drift velocity and its relation with electric current; Ohm's law, resistance and resistivity and their relation to drift velocity of electrons; V-I characteristics (linear and non-linear), electrical energy and power.		15
Suggested Readings			
<ol style="list-style-type: none"> Thermal Physics, S. Garg, R. Bansal and C. Ghosh, 1993, Tata McGraw-Hill. Thermodynamics, Enrico Fermi, 1956, Courier Dover Publications. Thermodynamics, Kinetic theory & Statistical thermodynamics, F.W.Sears and G.L. Salinger. 1988, Narosa University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole. Thermal Physics, A. Kumar and S.P. Taneja, 2014, R. chand Publications. University Physics. F.W. Sears, M.W. Zemansky and H.D. Young. 13/e, 1986. AddisonWesley 			
Continuous Internal Evaluation (CIE) Methods			
20 Marks for Test / Quiz / Assignment / Seminar 05 Marks for Class Interaction			