

				Lecture Plan			
Name of the college: Govt College of Arts Science and commerce Sanquelim Goa							
Name of Faculty: Suvarna G Patil			Subject: Physics				
Paper code: PHY213			Program: SY BSc			Division: A	
Academic year: 2025- 2026			Semester: II			Total Lectures: 60	
Course Objectives: To have basic understanding of Physics							
Expected Course Outcome:Understand Physics at basic level							
Student Learning Outcome: Understanding basic physics more deeply							
Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	23-06-25	28-06-25	3				

				Kinetic theory of gases Three states of matter, concept of ideal gas, postulates of Kinetic Theory of gases, 1. To determine temperature coefficient of Pt-100 2. Measurement of thermal conductivity of poor conductors 3. Measurement of thermal conductivity of good conductors 4. Determination of Stefan's constant	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
June/July	30/06/25	05/07/25	3	expression of pressure of a gas, relation between rms velocity and temperature, Average kinetic energy of a gas molecule, heat and temperature, kinetic interpretation of temperature, Degrees of freedom, Law of equipartition of energy and its application to specific heats of gases. 1. To determine temperature coefficient of Pt-100 2. Measurement of thermal conductivity of poor conductors 3. Measurement of thermal conductivity of good conductors 4. Determination of Stefan's constant	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books

July	07/07/25	12/07/25	3	Brownian motion and No. of Hours 8 its features, Einstein's equation (qualitative), Determination of Avogadro's number. Mean free path and derivation to calculate MFP, Transport phenomena, transport of momentum (viscosity). 1. To determine temperature coefficient of Pt-100 2. Measurement of thermal conductivity of poor conductors 3. Measurement of thermal conductivity of good conductors 4. Determination of Stefan's constant	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
July	14/07/25	19/07/25	3	Behaviour of real gases Deviation from perfect gas behaviour, Discussion of results of Andrew's experiments on CO₂ and Amagat's experiment, critical constants, 1. To determine temperature coefficient of Pt-100 2. Measurement of thermal conductivity of poor conductors 3. Measurement of thermal conductivity of good conductors 4. Determination of Stefan's constant		Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books

July	21/07/25	26/07/25	3	Van der Wall's equation of state, expression of Van der Wall's constants, Reduced equation of state, Law of corresponding state, relation between. Repeat Practical	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
July - August	28/07/25	02/08/25	3	Boyle temperature and critical temperature, critical coefficient . 5. Resistance Thermometry Cu wire 6. Thermistor- NTC /PTC 7. Study of thermocouples for temperature measurement 8. Constant volume air thermometer.	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
August	04/08/25	09/08/25	3	Zeroth and First Law of Thermodynamics Basic concepts of thermodynamics: Thermodynamic system, Thermodynamic variables, Thermodynamic equilibrium, and Thermodynamic processes, . 5. Resistance Thermometry Cu wire 6. Thermistor- NTC /PTC 7. Study of thermocouples for temperature measurement 8. Constant volume air thermometer.	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books

August	11/08/25	16/08/25	3	Zeroth law of thermodynamics and concept of temperature, Internal energy and First law of thermodynamics, Relation between pressure, volume and temperature in adiabatic process . 5. Resistance Thermometry Cu wire 6. Thermistor- NTC /PTC 7. Study of thermocouples for temperature measurement 8. Constant volume air thermometer.	Problem solving to understand from book		P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
August	18/08/25	23/08/25	3	, Work done in isothermal and adiabatic processes, Path dependence of heat and work. . 5. Resistance Thermometry Cu wire 6. Thermistor- NTC /PTC 7. Study of thermocouples for temperature measurement 8. Constant volume air thermometer.	Problem solving to understand from book		P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
August	25/08/25	30/08/25	3	Ganesh Chaturthi Break	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
September	2/09/25	06/09/2025	3	Second and Third Law of Thermodynamics Process- reversible and irreversible, condition of reversibility, Second	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books

				law of thermodynamics, Carnot's cycle, 5. Resistance Thermometry Cu wire 6. Thermistor- NTC /PTC 7. Study of thermocouples for temperature measurement 8. Constant volume air thermometer.			
September	08/09/25	13/09/25	3	efficiency of Carnot's cycle, reversibility of Carnot's cycle, Carnot's theorem, 5 coefficient of performance of a refrigerator, Thermodynamic scale of temperature . 5. Repeat	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
September	15/09/25	20/09/25	3	its identity with perfect gas scale. Entropy as a Thermodynamic variable, Entropy change in reversible and irreversible processes, Temperature–Entropy diagram of Carnot's Cycle, Entropy of a perfect gas, Physical significance of Entropy: Journal Correction	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
September	22/09/25	27/09/25	3	Entropy and Unavailable Energy, Entropy and molecular disorder, Entropy and Second Law of 12 Thermodynamics. Impossibility of attaining Absolute Zero, Third law of Thermodynamics, Power	Problem solving to understand from book		P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books

				cycles Internal Combustion Engines – The Otto cycle and its efficiency, Diesel cycle and its efficiency			
September/October	29/09/25	04/10/25	3	. Production of low temperature. Cooling by evaporation. Vapour compression machines. Refrigerators based on Vapour absorption. Cooling by sudden adiabatic expansion of compressed gases. Efficiency and performance of refrigerating machines. Enthalpy and heat flow.	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
October	06/10/25	11/10/25	3	Joule Kelvin effect. Expression for Joule Kelvin coefficient and 3 10 inversion temperature. Application to Van der Waals' gas. Principles of regenerative and cascade cooling. Liquifaction of hydrogen and helium. Production of temperatures below 4o K. Properties of He I and He II.	Problem solving to understand from book	Chalk Board	P. G. Hewitt, Conceptual physics, 12th ed., Pearson, 2015. Other reference Books
October	13/10/25	18/10/25	3	Revision			

Component	Max Marks
ISA 1	7.5
ISA 2	7.5
ISA 3	7.5
Practical	25
Semester End Exam	60

