COURSE OBJECTIVES AND COURSE OUTCOMES

T. Y. B. Sc. SEMESTER - V

PHYSICS PAPER - IV

SUBJECT: ATOMIC AND MOLECULAR SPECTRA (USPH504)

Sr. No.	Course Objectives	Course Outcomes
1)	To introduce concepts of Gauss law, scalar electric potential etc. from electrostatics in free space and material medium To develop electrostatics in dielectric media and understand polarization of medium	Capable of developing concepts of electrostatics in free space and further apply them in materials Improve the understanding of the ideas such as polarization and study dielectric material medium
2)	To study magnetostatics and develop concepts from Ampere's law in straight wire and solenoid. Explain magnetic vector potential	Ability to understand Ampere's law and its use in straight wire and solenoid
3)	To develop magnetostatics in matter and introduce Maxwell's equations	Evolving concepts in magnetostatics in material medium and Maxwell's equations
4)	To apply the concepts of electrodynamics for electromagnetic waves and develop Poynting's theorem	Capability of understanding Poynting's theorem and concepts of electromagnetic waves in free space and linear medium
5)	To solve problems in electrostatics and magnetostatics and further using Maxwell's equations	Progress in problem solving skills in the field of electrostatics, magnetostatics, classical electrodynamics

COURSE OBJECTIVES AND COURSE OUTCOMES

T. Y. B. Sc. SEMESTER - VI

PHYSICS PAPER - IV

SUBJECT: SPECIAL THEORY OF RELATIVITY (USPH604)

Sr. No.	Course Objectives	Course Outcomes
1)	Newtonian relativity, its drawbacks, need for new theory	Explain frame of references and classify them. Design of the Michelson-Morley experiment. Solve the equation for fringe shift. Discuss the result expected and the actual result obtained. Analyze the different hypothesis used to explain the null result. Justify the need for a new relativity theory
2)	Laws of relativity and the transformation in kinematics	Outline the laws of Relativity. Explain the importance of speed of light in relativity. Solve the equations for space and time transformations. Explain the significance of the result from these transformations. Solve the equations for transformation of velocity and acceleration. Use the transformation equation to solve problems
3)	Relativistic kinematics and their applications	Solve the transformation equation for velocity and acceleration. Use the Lorentz transformation to get the frequency transformation. Explain the Doppler effect and justify transverse Doppler effect. Explain stellar aberration; show how Einstein's relativity predicts its presence. Construct the Minkowski's space-time diagram, using the Lorentz space time transformation. Recommend this geometrical representation of space time, for better understanding of the relativistic results

4)	Relativistic dynamics and their inferences	Justify the need to redefine momentum. Solve the momentum and energy transformation equation. Inspect the mass-energy relation. Solve the relativistic force transformation. Explain how circular motion is inherent property in Einstein's relativity. Solve various problems
5)	Relativity in electromagnetism and introduction to general theory of relativity	Explain interdependence of Electric and magnetic field in relativity. Use force transformation to get the electric and magnetic field transformations. Justify invariance of how Maxwell's equations in Relativity. Solve using field transformation equation, the field due a uniformly moving charge. Examine the force and field due to a current carrying wire and moving charges Outline the principle of Theory of general relativity. Explain Gravitational red shift