1. Subject Code: **EP-204** Course Title: **Optics**
2. Contact Hours : L : 3 T : 0 P : 2
3. Examination Duration (Hrs.) : Theory : 3 Practical : 0
4. Relative Weight : CWS : 15 PRS : 15 MTE : 30 ETE : 40 PRE : 0
5. Credits : 4
6. Semester : EVEN
7. Subject Area : DCC
8. Pre-requisite : Knowledge of the concepts of trigonometric operations and differential and integral calculus
9. Objective : To provide the in depth analysis of the concepts of the interference, diffraction and polarization and the applications related to them
10. Details of Course :

4th Semester

S. No.	Contents	Contact Hours
1.	Wave nature of light, Coherence: Spatial and temporal coherence, spectral resolution of a finite wave train, Optical Beats, Coherence time and line width via fourier analysis, Fourier transform spectroscopy.	**08**
2.	Theory of interference and interferometers: Interference of two monochromatic waves, two beam interference, multiple beam interference, Michelson interferometer, Fabry Perot interferometer	**08**
3.	Theory of diffraction, Fraunhofer diffraction, Single slit diffraction, two slit diffraction, N slit diffraction, diffraction by a circular aperture, diffraction by rectangular aperture, Resolving power of grating.	**06**
4.	Fresnel Diffraction , Fresnel Half period zones , zone plate, Gaussian beam propagation, Fresnel diffraction A Rigorous approach, Diffraction by straight edge, diffraction of a plane wave by along narrow slit and transition to the fraunhofer region	**10**
5.	Polarization , Production of Polarized light by different mechanisms	**05**
6.	Introduction to Lasers , Different types of lasers, Einstein Coefficients and Optical Amplification	**05**
	Total	**42**

Suggested Books

S.No.	Name of Books/ Authors	Year of Publication/ Reprint
1.	Optics by Hecht and Ganeshan	2012/Pearson
2.	Introduction to Optics by A.Ghatak	2012/Tata McGraw Hill.
3.	Principles of Optics by M. Born and E. Wolf,	McMillan
4.	Optical Physics by S. C. Lipson and H. Lipson	2010/ Cambridge University Press
5.	Introduction to optics by Pedrotti and Pedrotti	2014/ Pearson Prentice Hall
6.	Optoelectronics and Photonics by S.O. Kasap	2010/Pearson

List of Experiments for Optics Lab

1. To measure the spot size and divergence of a laser beam.
2. To draw normal dispersion curve by using spectrometer and to determine Cauchy's constant.
3. To determine the diameter of a thin hair by interference due to a wedge shape air film.
4. To determine the resolving power of a plane transmission grating.
5. To determine the diameter of a circular aperture by Fraunhofer diffraction pattern.
6. To determine the value of Young's modulus 'Y' of a glass plate by Cornu's method.

7. To determine the wavelength of laser source using Michelson's interferometer.