Government College, Nagda, Distt. – Ujjain (M. P.)
B.Sc. 2nd year major (planner)

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Teacher's Name - Dr. K.C. Mishra **Subject- Physics**
Class- B.Sc. 2nd year **Paper- Major 1**
Session- 2023-24

week	TIME	UNIT (no.)	Unit name	(SYLLABUS & TOPICS)
1		1	Geometric optics & waves	Fermat's principle, refraction at a spherical surface, aplanatic points and its applications, combination of thin lenses, dispersion and dispersive power, chromatic aberration and achromatic combination, different type of aberration (qualitative)and their remedy
2		1	Geometric optics&waves	Ramsden and Huygens's eyepiece, simple harmonic motion, damped oscillations, average kinetic energy, average potential energy circuit (discharge of a condenser through an inductance and resistance), need for multiple lenses in eyepieces, forced oscillations and resonance, beats, stationary wave in a string; pulse and wave packets: phase and group velocities, reflection and refraction from Huygens's principle
3		2	Interference of light	The principle of superposition, coherence requirement for the sources, to slit interference, localized fringes, thin films, optical path retardations, lateral shift of fringes, Newton's rings, interference by a film with two non-parallel reflecting surfaces.
4		2	Interference of light	Haidinger fringes, its application for precision determination of wavelength, Michelson interferometer , intensity distribution in multiple beam interference, wavelength difference and the width of spectral lines. Fabry-Perot interferometer and etalon.
5		3	Diffraction	Fresnel and Fraunhofer diffraction, Half period zone, zone plate. Diffraction at straight edge, rectilinear propagation. Diffraction at a slit, phasor diagram and integral calculus methods .
6		3	Diffraction	Diffraction at a circular aperture. Rayleigh criterion of resolution of images, images, resolving power of telescope and microscope. diffraction at N- slits, intensity distribution, plane diffraction grating, resolving power of a grating
7		4	polarization	Transverse nature of light waves, polarization of

				electromagnetic waves, plane polarized light (production and analysis), description of linear, circular and elliptical polarization. propagation of electromagnetic waves in anisotropic media, uniaxial and biaxial crystals, symmetric nature of dielectric tensor, double refraction, Huygens's principle, ordinary and extraordinary refractive , indices , Fresnel's formula
8		4	polarisation	propagation of electromagnetic waves in anisotropic media, uniaxial and biaxial crystals , symmetric nature of dielectric tensor, double refraction, Huygens's principle, ordinary and extraordinary refractive , indices , Fresnel's formula
9		4	polarisation	Light propagation in uniaxial crystal, Nicol prism, production of circularly and elliptically polarised light, babinet compensator and applications optical rotation in liquids and its measurement through polarimeter
10		5	Fibre optics and laser	Principle of fibre optics, attenuation, pulse dispersion and step index and parabolic index fiber .a brief story of lasers characteristics of laser light , einstein prediction relationship between einstein's coefficients pumping schemes resonators ruby laser he - ne laser , applications of laser principle of holography , photo diode ,phototransistors and photo multipliers