INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
भारतीय प्रौद्योगिकी संस्थान तिरुपति
Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, Andhra Pradesh - 517 619

1.	Title of the course	Applied Optics
2.	Course number	PH202L
3.	Structure of credits (L-T-P-C)	3-1-0-4
4.	New course/modification to	New
5.	To be offered by	Physics
6.	Proposed by	Arijit Sharma
7.	Prerequisite	None
8.	**Course Objective(s):** To review basic concepts in classical optics with applications in optical engineering. To explore several optical phenomena and their applications in engineering. To illustrate basic concepts related to lasers, holography and fiber optics.	
9.	**Course Content:** Geometrical optics: introduction of geometrical optics and ray theory, Fermat's principle, refraction, reflection, thick and thin lenses; Interference by division of wavefront: superposition and interference of light waves, Young's double slit experiment; Interference by division of amplitude: thin parallel and wedge-shaped films, Newton's rings, multiple beam interference and applications; Diffraction: introduction to diffraction, near and far field diffraction; Fresnel diffraction; Fraunhofer diffraction; Polarization: Brewster's law, Malus's law, production of polarized light, quarter and half wave plates; Coherence: basic concepts, spatial and temporal coherence; Basic concepts of holography; Basic concepts of optical fibers; Introduction to lasers: spontaneous and stimulated emission coefficients, population inversion.	
10.	**Textbook(s):** 1. Hecht E and Ganesan A R, Optics, 5th Edition, Pearson Education (2019). 2. Ghatak A, Optics, 7th Edition, McGraw Hill (2020).	
11.	**Reference(s):** 1. Brooker G, Modern Classical Optics, Oxford University Press (2003). 2. Jenkins F A and White H E, Fundamentals of Optics, 4th Edition, McGraw Hill Education (2017). 3. Fowles G R, Introduction to Modern Optics, Dover Publications Inc. (1990).	