Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore

NATIONAL EDUCATION POLICY

GENERAL ELECTIVE FOR UG

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment *	End Sem University Exam	Teachers Assessment*				
GUPH201	IDC	LASER: Principal, Properties and Applications	60	20	20	00	00	4	0	0	4

Course Objectives	1. To develop the interest and to provide basic understanding principal of Laser. 2. To develop the acquaintance with unique properties of laser and their origin along common day today life applications of laser in the diverse field from science and technology to arts and entertainment. 3. To develop the ability to learn and adopt scientific and technological innovations for utilization it in their respective field.
Course Outcomes	1. Student will be able to understand basic principle and working of Laser, 2. Student will be able to utilize unique properties of laser to improve the efficiency and accuracy in their diverse field of profession from science and technology to arts and entertainment. 3. Student will be able to learn and adopt scientific and technological innovations for utilization it in their respective field of profession.

Abbreviation		**Teacher Assessment (Theory) shall be based on following components: Quiz / Assignment/ Project / Participation in class (Given that no component shall be exceed 10 Marks).**
Th	Theory	
T	Tutorial	**Teacher Assessment (Practical) shall be based on following components: Viva / File / Participation in Lab work (Given that no component shall be exceed 50% of Marks).**
P	Practical	

Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth
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Controller of Examination
Shri Vaishnav Vidyapeeth
Vishwavidyalaya, Indore

Joint Registrar
Shri Vaishnav Vidyapeeth
Vishwavidyalaya, Indore

GUPH201: LASER: Principal, Properties and Applications

UNIT I: Principal of Laser

Introduction to Laser, History of Laser, Spontaneous and Stimulated Emission, Population Inversion, Pumping, Resonator.

UNIT II: Classification of Laser

Classification of laser, Techniques of pumping for different types of lasers, Pumping Schemes: two, three and four level. Contentious and Pulse lasers.

UNIT III: Properties of Laser

Unique Properties of Laser with their origin: High Intensity, High Brightness, High Coherence, High Monochromaticity, High Directionality, Polarizability, Ultra short duration pulses.

UNIT IV: Applications of Lasers-I

Material Processing: Cutting, welding, drilling, Surface hardening etc, Laser in communication, Medical in Medicine, Pollution Detection, Online flow measurement, Creation and confinement of plasma.

UNIT V: Applications of Lasers-II

Enrichment of Uranium U^{235}, Target designation, LIDAR, Holography, Entertainment, Barcode reading, DVD and Blue Ray reading writing, etc.

REFERENCES

1. Optics By Ghatak, TMH
2. Engineering Physics- V. S. Yadava, TMH
3. Optics by Brijlal and Subhraininyan.
4 Optroelectronics an Introduction, J.Wilson & J.F.B.Hawkes, Prentice-Hall II Edition.
5. LASER theory and applicationsby by A. K. Ghatak & Tyagarajan, 1984,
6. LASERSs and Electro Optics, Christopher C. Davis, Cambridge Univ. Press, 1996.