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*				
GUPH501	GE	Plasma and its Applications	60	20	20	0	0	4	0	0	4

Course Objectives	1. To develop a basic understanding of Plasma Physics. 2. To develop critical thinking ability, while exploring the physics behind the science fiction.
Course Outcomes	1. Students belonging to various streams will be able to understand the basics of Plasma Physics. 2. Student will be able to understand the role of Physics in science fiction movies and literature.

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
Vishwavidyalaya, Indore

Chairperson
Faculty of Studies
Shri Vaishnav Vidyapeeth
Vishwavidyalaya, Indore

Controller of Examination
Shri Vaishnav Vidyapeeth
Vishwavidyalaya, Indore

Joint Registrar
Shri Vaishnav Vidyapeeth
Vishwavidyalaya, Indore

GUPH501: Plasma and its Applications

UNIT I: Introduction of Plasma: Occurrence of Plasmas in Nature, Definition of Plasma, Concept of Temperature, The Saha Equation, Quasineutrality, Debye Shielding,

UNIT II: The Plasma Parameters, Three condition for Plasmas, Single Particle: single particle motion, Uniform E and B Fields, Nonuniform B Field, Nonuniform E Field, Time varying E Field, Time-Varying B Field, Center Drifts, Adiabatic Invariants.

UNIT III: Pollution Treatment, Liquid radioactive waste utilization, Semiconductor Processing, Ion Implantation, Living Tissues Treatment, High Energy Density Pinch Plasma, Plasma Pencil, Low Current Non-Thermal Plasmatron, Plasma Etching, Plasma Antenna of Beam Forming,

UNIT IV: Biomedical applications; sterilization, treatment of mammalian and cancerous cells, blood coagulation, wound healing and tooth treatment,

UNIT V: Plasma agriculture and innovative food cycles, Atmospheric Pressure Plasma Jet, Plasma gun Techniques.

REFERENCES

1. J D Jackson: Classical electrodynamics (Berkley, California).
2. J A Bittencourt: Fundamentals of Plasma Physics (Springer).
3. F F Chen: Introduction to Plasma Physics (Plenum Press).