

**GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE,
RAJNANDGAON (C.G.)**



DEPARTMENT OF PHYSICS

**PROGRAMME OUTCOMES AND COURSE OUTCOMES
2023-24**

**GOVT. DIGVIJAY AUTONOMOUS PG COLLEGE
RAJNANDGAON
DEPARTMENT OF PHYSICS (2023-24)**

PROGRAM OUTCOMES (PO)

❖ **The Graduates of the department will attain:**

PO1: The undergraduate training in physics is aimed at providing the necessary inputs so as to set forth the task of bringing about new and innovative ideas/concepts so that the formulated model curricula in physics becomes in tune with the changing scenario and incorporate new and rapid advancements and multi disciplinary skills, societal relevance, global interface, self sustaining and supportive learning.

PO2: The Thermodynamic & Statistical paper is aimed at preparing the background of thermodynamics & statistical physics essential for any advanced study of physics of condensed matter & radiations. The Optics & Wave and Acoustics paper is mainly concerned with a course on geometrical & physical optics & the laser physics. It deals with important phenomenon like interference, diffraction & polarization with stress on the basic nature of light. It also introduces the basics of laser physics with some of its important applications.

PO3: The Relativity, quantum mechanics, atomic molecular and nuclear physics paper is aimed at preparing the background of modern physics which includes the relativistic & quantum ideas mainly concerned with atomic, molecular & nuclear physics. It consists an essential pre-requisite for better understanding of any branch of Physics.

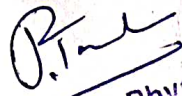
The Solid state physics, solid state devices and electronics theory paper is mainly concerned with Solid State Physics, Solid State Devices & Electronics. This course is quite important from the applicational aspects of modern electronic devices. It also forms the basis of advance electronics including communication technology to be covered at higher level.

❖ **The Post graduates of the department will attain:**

PO1: The benefits of career-oriented course can be extended to regular students. Education plays very vital in each and every person's life.

PO2: An ability to design, simulate and conduct experiments, as well as to analyze and interpret data including hardware components.

PO3: An ability to function on multi-disciplinary teams.


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PROGRAM SPECIFIC OUTCOMES (PSO)

❖ The Graduates of the department will attain:

PSO1: It is desired that undergraduate i.e. B.Sc. level besides grasping the basic concepts of physics should in addition have broader vision. Therefore, they should be exposed to societal interface of physics and role of physics in the development of technologies.

PSO2: Present course is aimed to provide ample knowledge of basics of physics which are relevant to the understanding of modern trends in higher physics. The experiments are based mostly on the contents of theory papers so as to provide comprehensive insight of the subject.

PSO3: Acquire


(i) A fundamental/systematic or coherent understanding of the academic field of Physics, its different learning areas and applications in basic Physics like, Nuclear and Particle Physics, Condensed matter Physics, Atomic and Molecular Physics, Mathematical Physics, and its linkages with related disciplinary areas / subjects like Chemistry, Mathematics, Life sciences, Environmental sciences, Computer science, Information Technology.

PSO4: Skills in areas related to one's specialization area within the disciplinary/subject area of Physics and current and emerging developments in the field of Physics.

❖ The Post graduates of the department will attain:

PSO1: The aim of college is to bring the quality education to the student in every aspect of life with view and looking at the future and of the M.Sc. in Physics.

PSO2: The ability to analyze, design and implement application specific electronic system for complex circuit problems for analog, digital domain, communications and signal processing applications by applying the knowledge of basic sciences, Physical mathematics and physical fundamentals.


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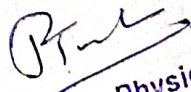
COURSE OUTCOMES (CO)

❖ The Graduates of the department will attain:

CO1: To introduce the basics of mechanics and create problem solving approach in mechanics. Learn the basics of properties of matter, How solid and liquid matter behaves and give characteristics in physical changes. To learn the effect of electric field and magnetic field in instrumentation and get theoretical as well as experimental knowledge of it. To learn the fundamental ideas of electrostatics and magnetostatics and to apply them to understand general phenomenon. To learn the behavior of electrical circuit with different elements and enhance the capability of analytical study in electrical devices.

CO2: To become familiar with various concept and phenomena in thermodynamics. To Clear understanding of advanced thermodynamic processes and develop problem solving approach. To introduce the basic concept of statistical mechanics and expand the knowledge to the optimum level so that they must understand the theoretical phenomenon in materials. To learn about waves and oscillations and apply them to understand the theory and application of it. To learn advance level in optics and understand the working of common optical instruments. Detailed knowledge of interference, diffraction and polarisation with problem is provided. To learn the concept of laser system and different type of laser with their applications.

CO3: To know the origin of quantum mechanics and necessity to explain various effects. To learn fundamental concepts of quantum mechanics and approach to the complex problems that can be explained. To get the qualitative idea of atomic and molecular spectra and related effects like Raman effect and Zeeman effect. To understand the phenomenon of Nuclear physics and know the working and theory of nuclear reactor. To know the basics of elementary particles. Basics of Solid state physics is to be learned to understand the electrical and magnetic properties of solid materials. To learn the basics of solid state devices like diode and transistor and understand their working and applications. To learn C programming basics and apply it in general mathematical cases.


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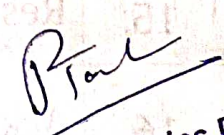
The Post Graduates of the department will attain:

CO1: Important mathematics used to understand physics at higher level is to know. Detailed study on metrics, complex analysis, differential equation, special function and integral transform has to be done. To understand the classical mechanics in generalised coordinate and analyse the problem in Langrangian and Hamiltonion formulation methods. To know the various theorems that can be used to understand the higher degree of knowledge in classical mechanics. To understand advanced analysis in electro dynamics and instrumentation used in research field. To know the innovative phenomenon in Plasma physics. To get the knowledge beyond diode and transistor of basis electronics by studying JFET, MOSFET, UJT, SCR, Diac and Triac like electronics components. To understand of optoelectronics and related phenomenon and devices. To get experimental knowledge of basics in electronics devices

CO2: To learn the Quantum mechanics advanced to the graduate course by used new methods and symbolism in quantum mechanics. To study the Statistical physics with basic concept and method of formation of problems and phenomenon. To learn the advanced electronics used in digital electronics like operational amplifiers, basic logic design, microprocessors and their applications. To understand the numerical analysis method and their use to analysis experimental data in physics and fitting of experimental data to the theoretical consideration. To get experimental knowledge of general properties and electronics.

CO3: To study the advanced Quantum mechanics method like variation method, WKB approximation, partial wave analysis and time dependent perturbation and applications of them in solving complex problems. To learn atomic and molecular physics to understand the spectral behaviour of matter and their theoretical analysis. Detailed study of various effects related to spectra and their applications. To understand the basics of solid state physics, crystal structure, band formation in solids and their applications. To learn the basics phenomenon of superconductivity.

CO4: To study the advanced level of nuclear and particle physics and understanding of structure and phenomenon related to nucleus. To understand the interaction of elementary particle and explain them theoretically. To understand the basics of laser physics, different type of lasers and their applications. To study the advanced level of solid state physics, dielectrics, ferroelectrics, magnetic materials and their types and different type of defects in crystalline materials. To study the various type of digital communication system and their mathematical analysis and applications in current age communication systems. To make a major project to upgrade experimental knowledge.


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