**UG COURSE STRUCTURE**

**DEPARTMENT OF PHYSICS**

**S.G.R.R. (P.G.) COLLEGE**

**B.Sc. (Six Semesters/Three Years Degree Course) Under CBCS System.** A candidate has to select three subjects from the following subjects as core course (C.C.) having 6 credit for each subject.

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| **Physics - 240 seats** |  |  |
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A candidate has to choose one of the following combinations :

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| (i) Chemistry, Physics, Mathematics (CPM) |  |
| (ii) Physics, Mathematics, Geology (PMG) |  |

**For merit calculations for admission in B.Sc-I, candidate will mention the marks obtained in PCM/PCB in class XII in online registration form.**

**B.Sc. Physics**

**Theory:-**

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| **Sl. No.** | **Core Papers** | **Particulars** |
| **1.** | **Mechanics**  **(241111)** | The students would learn about the behavior of physical bodies it provides the basic concepts related to the motion of all the objects around us in our daily life. The course builds a foundation of various applied field in science and technology; especially in the field of mechanical engineering. The course comprises of the study vectors, laws of motion, momentum, energy, rotational motion, gravitation, fluids, elasticity and special relativity. |
| **2.** | **Electricity and Magnetism**  **(242111)** | It gives an opportunity for the students to learn about one of the fundamental interactions of electricity and magnetism, both as separate phenomena and as a singular electromagnetic force. The course contains vector analysis, electrostatics, magnetism, electromagnetic induction and Maxwell’s equations. The course is very useful for the students in almost every branch of science and engineering. |
| **3.** | **Thermal Physics and Statistical Mechanics**  **(243111)** | The course makes the students able to understand the basic physics of heat and temperature and their relation with energy, work, radiation and matter. The students also learn how laws of thermodynamics are used in a heat engine to transform heat into work. The course contains the study of laws of thermodynamics, thermodynamic description of systems, thermodynamic potentials, kinetic theory of gases, theory of radiation and statistical mechanics. |
| **4.** | **Wave and Optics**  **(244111)** | The course comprises of the study of superposition of harmonic oscillations, waves motion (general), oscillators, sound, wave optics, interference, diffraction, polarization. The course is important for the students to make their career in various branches of science and engineering, especially in the field of photonic engineering. |
| **5.** | **Elements of Modern Physics**  **(245411)** | Students would know about the basic principles in the development of modern physics. The topics covered in the course build a basic foundation of undergraduate physics students to study the advance branches: quantum physics, nuclear physics, particle physics and high energy physics. The course contains the study of Planck’s hypothesis, photoelectric effect, Compton effect, matter waves, atomic models, Schrodinger wave equations, and brief idea of nuclear physics. |
| **6.** | **-Quantum Mechanics**  **(246411)** | Quantum mechanics provides a platform for the physicists to describe the behavior of matter and energy at atomic and subatomic level. The course plays a fundamental role in explaining how things happen beyond our normal observations. The course includes the study of Schrodinger equations, particle in one dimension potential, quantum theory of H like atoms, atoms/molecules in electric and magnetic fields. |

**Practical (Lab):-**

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| **Sl. No.** | **Core Papers** | **Particulars** |
| **1.** | **Mechanics Lab**  **(241611)** | Students would perform basic experiments related to mechanics and also get familiar with various measuring instruments would learn the importance of accuracy of measurements |
| **2.** | **Electricity and Magnetism Lab (242611)** | Students would gain practical knowledge about electricity and magnetism and measurements such as: Resistance, Voltage, current etc. |
| **3.** | **Thermal Physics and Statistical Mechanics Lab**  **(243611)** | Students would gain practical knowledge about heat and radiation, thermodynamics, thermo emf, RTD etc. and perform various experiments. |
| **4.** | **Wave and Optics Lab**  **(244611)** | The practical knowledge of wave motion doing experiments: Tuning fork, electric vibrations. They would also learn optical phenomena such as interference, diffraction and dispersion and do experiments related to optical devices: Prism, grating, spectrometers |
| **5.** | **Elements of Modern Physics Lab**  **(245812)** | In this course students would be able to understand Basic experiments of modern physics such as: Determination of Plank’s and Boltzmann’s constants, Determination of ionization potential, Wavelength of H-spectrum, Single and double slit diffraction, Photo electric effect and determination of e/m. |
| **6.** | **Quantum Mechanics Lab**  **(246812)** | : Various practical problems solving methods related to Quantum Mechanics would be learned by students |

**Skill Enhancement Courses:**

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| **Sl. No.** | **SEC Papers** | **Particulars** |
| **1.** | Electronics –I  (243313) | The students would gain the knowledge of Basic Electronics circuits, network theorems and measuring instruments: They would know about common solidstate devices: Semiconductor diodes and transistors. The topics also include the Rectifiers, Filters and their applications, number systems and logic gates which are foundation blocks of digital electronics. |
| **2.** | Electronics –II  (243314) | Students would learn about electronic circuits such as Amplifiers and Oscillators. Various types of Amplifier and Oscillator circuits their working and applications in in domestic, industrial and scientific devices/equipments. |