**PG COURSE STRUCTURE**

**DEPARTMENT OF PHYSICS**

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

**एम0एस0सी0 प्रथम सेमेस्टर प्रवेश के लिए**

 (1) एम0एस0सी0 प्रथम सेमेस्टर में प्रवेश हेतु न्यूनतम अर्हता इस विश्वविद्यालय या विधि मान्य किसी अन्य विश्वविद्यालय की त्रिवर्षीय बी0एस0सी0 परीक्षा कम से कम 45 प्रतिशत अंकों से उत्तीर्ण होनी चाहिए। इसके अतिरिक्त प्रवेश मेरिट लिस्ट के आधार पर किये जायेंगे, जिसके लिये मेरिट फार्म भरकर निर्धारित संलग्नकों सहित संबंधित कार्यालयों में अंतिम तिथि से पूर्व जमा करना होगा। मेरिट में स्थान आने पर प्रवेश आवेदन पत्र में माँगे गये संलग्नक प्रस्तुत करने पर प्रवेश प्रदान किया जायेगा।

 (2) प्रत्याशी केवल उसी विषय में प्रवेश ले सकते हैं जो उन्होंने बी0एस0सी0 स्तर पर मुख्य विषय के रूपमें कलया है। जिन विश्वविद्यालयों में स्नातक स्तर पर तृतीय वर्ष में दो विषय चयन करने कर प्रावधान है, ऐसे विश्वविद्यालयों के प्रत्याशी अन्तिम वर्ष में चयनित विषयों में प्रवेश हेतु अर्ह होंगे।

नोट: एम0एस0सी0 मेािट फार्म जमर करने वाले छात्र/छात्राएँ सुनिश्चित कर लें कि स्नातक कक्षा की प्रत्येक वर्ष की अंक तालिका में लिखित और प्रायौगिक परीक्षा के पूर्णांक व प्राप्तांक अलग-अलग दर्शाए गये हैं। स्नातक स्तर के कुल प्राप्तांको के अतिरिक्त विषयों तथा भाषायें, सामान्य पाठ्यक्रम आदि के प्राप्तांक नही जोड़े जायेंगे।

**M.Sc. Physics – 20 seats**

**M.Sc. Physics**

**Theory:-**

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| **Sl. No.** |  **Papers** | **Particulars** |
|  | **Phy-C001: Classical Mechanics****(241161)** | **:** In this course students would learn to apply the Newtonian laws using various mathematical formulations to describe the motions of macroscopic objects using generalized coordinates, momentum, forces and energy. The classical mechanics would be helpful in understanding of advanced branches of modern physics. |
|  | **Phy-C002: Mathematical Physics****(241162)** | Students would be able to understand the mathematical methods essential for solving the advanced problems in physics. It would be helpful in the development of the ability to apply the mathematical concepts and techniques to solve the problems in theoretical and experimental physics. The knowledge of mathematical physics would be beneficial in further research and development as it serve as a tool in almost every branch of science and engineering.  |
|  | **Phy-C003: Electrodynamics & Astrophysics****(241163)** | The study of electromagnetic theory provides basic foundation for the students to understand advanced courses of physics. The astrophysics part of the course opens scope for students seeking research opportunities in space, atmospheric and planetary sciences etc. The course involves the study of electromagnetic theory, Maxwell’s equations and electromagnetic waves, radiations from moving charges, solar and stellar systems.  |
|  | **Phy-C004: Electronics****(241164)** | This course comprises of basics understanding of power amplifiers, feedback amplifiers, operational amplifiers and optoelectronic devices. This course is helpful for the students seeking job opportunities in government, corporate and private sectors. It is also helpful for the students to find opportunities research &development (R & D). The in depth understanding of electronics at post graduate level opens scope for the students to work in private and public sector enterprises. |
|  | **Phy-C007: Atomic and Molecular Physics:****(242161)** | The course structure includes atomic and molecular spectroscopy. As per the course structure, the students learn basics concepts of spectroscopic principles and rules. Students would learn technique in spectroscopy and know about their applications. The course is helpful for the students to explore R & D opportunities in various areas of science and technology such as biomedical, industrial and environmental fields |
|  | **Phy-C008: Solid State Physics:****(242162)** | students will be able to develop an understanding of the lattice, different types of crystal structures, symmetries. The student would gain insight about the interior of the substances using X-ray diffraction in crystals. This course also includes elastic waves, phonons, and lattice vibrational properties. The course forms a theoretical basis of experimental material science and technology. |
|  | **Phy-C009: Statistical Physics:****(242163)** | The course includes the study of Basic postulates, application of classical distribution to ideal gases, imperfect gases, quantum statistics and black body radiation. The course is helpful for the students to understand the dynamics of the bulk material in macroscopic as well as microscopic levels. It is also useful to understand the relation between microscopic and macroscopic systems. Understand how statistics of the microscopic world can be |
|  | **Phy-C010: Quantum Mechanics:****(242164)** | The course provides an understanding of the behaviour of the systems at microscopic (atomic and nuclear) scale and even smaller. Students would learn basic postulates and formulations of quantum Mechanics. The course, in fact, plays an important role in explaining the behavior of all physical systems in the universe. The course includes the study of a brief review of foundations of quantum mechanics, matrix formulation of quantum mechanics, symmetry in quantum mechanics and approximation methods for bound states. |
|  | **Phy-C013: Advanced Quantum Mechanics:****(243161)** | The course includes the study of scattering theory, identical particles, relativistic wave equations and quantization of wave fields. The course would describe the nature and behavior of matter and energy at subatomic level. In particular, theory of scattering gives an understanding collision between a quantum mechanical particle and target. The study of relativistic quantum mechanics enables the students to understand the behavior of objects moving with speeds comparable to that of light. |
|  | **Phy-C014: Nuclear Physics:****(243162)** | In this course students would know about the general properties of nuclei, nuclear forces and detectors, radioactive decay and nuclear reactions. The course expands the knowledge of students especially, the various applications of nuclear physics The course builds a foundation for the students to carry out research in the field of nuclear physics, high energy physics, nuclear astrophysics, nuclear reactions and applied nuclear physics. |
|  | **Phy-E001: Condensed Matter Physics A:****(243461)** | The course includes the study of defects in crystals, magnetism, energy bands and dielectric and electrical properties of insulators. This course is of immense importance for the students seeking R & D opportunities in the field of theoretical condensed matter physics, material science, device fabrication, nanoscience and nanotechnology etc. |
|  | **Phy-C016: Computational Physics**:(244161) | The course provides an opportunity to the students to learn about the fundaments of computer applications in solving the problems in different branches of Physics and Mathematics. They would learn basics of C-programming and FORTRAN-90/95 programming languages and their applications which can useful in their future carrier in the field of research and technology |
|  | **Phy-C017: Particle Physics:**(244162) | The course is important for the students to learn about the most fundamental building blocks of matter and radiation, interaction among elementary particles and hence to understand their behavior. The course provides a platform for the students seeking research opportunities in high energy physics. |
|  | **Phy-E007: Condensed Matter Physics B:****(243461)** | The course gives in depth understanding of condensed matter physics, including Dielectric and Ferroelectric, Piezoelectric properties, superconductivity, nanomaterials and nanoscience and technology. The students have the opportunity to use the basic principles of condensed matter physics in frontier areas of research and development in the field of material science, nanoscience and nanotechnology. |
|  | **Phy-E008: Electronics B:****(244462)** | The course is very important for the students to understand the broadcasting of a message signal from transmitter, its radiation mechanism (how modulated electrical signal is propagated in the form of radio waves) and its detection or demodulation (extraction of original message from modulated signal) at receiver. The course includes the study of modulation, demodulation, transmitters, receivers, TL, antenna, propagation of radio waves, TV, Radar systems. The course is gives the basic science of working of a wireless communications system. The course is also useful for the students to understand the basic function of Television and Radar systems |

**Practical (Lab):-**

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| **Sl. No.** |  **Papers** | **Particulars** |
| **1.** | **PHY-005&006: Lab Course I&II:** | Students would gain practical knowledge of basic electronic circuits and components by performing experiments in laboratory the experiments include: LCR, UJT MOSFET, Transistors, Amplifiers, and Oscillators. |
| **2.** | **PHY-C011 & 012: Lab Course I & II:**  | Students would gain practical knowledge by performing various experiments of Electronics, Optics and Radiation. |
| **3.** | **Phy-C015: Lab Course I:** | In This Course students would gain the practical knowledge by performing various experiments related to different field in physics and would also learn to design the experiments themselves under the supervision. |
| **4.** | **PHY-E006:Lab Course II (Circuit design):** | Students to would physically experience about various electronic components and learn to design some basic electronic circuits and study their applications |
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