Vidyasagar University

Midnapore-721102, West Bengal

POs & PSOs for the Post-Graduate Programme in PHYSICS

National Educational Policy – 2020

[w.e.f. 2025-26]

Department of Physics 25-26

Programme Objectives (POs)

The Master of Science in Physics programme is designed to train students through theory and practical courses so that they are ready for advanced research and specialized careers in Physics. Our objectives span three core areas, namely, mastering the fundamentals, building specialized knowledge, and developing a research mindset.

The programme's foundation is built on an in-depth understanding of core physics principles. Through mandatory courses, students will achieve conceptual mastery in key areas: Classical Mechanics, Quantum Mechanics, Mathematical Physics, Statistical Mechanics, and Classical Electrodynamics, Condensed Matter Physics, Electronics, Nuclear and Particle Physics and Molecular Spectroscopy and Applied Optics.

Along with this the students are offered elective special papers to gain in-depth knowledge
according to their choice. These special papers include, Advanced Condensed Matter Physics, Applied Electronics, Astrophysics, Quantum Field Theory, Particle Physics and General Theory of Relativity.

Beyond theory, our other objective is to cultivate problem solving skills through tutorials, practical applications through the lab-based courses and computational proficiency through the computer lab course.

Dissertations in both theoretical and experimental streams offer a crucial firsthand experience in the research process, giving students a genuine taste of how new findings are generated.

Ultimately, the M.Sc course is structured to provide a robust academic platform, serving as the essential foundation for students (i) to pursue doctoral studies (Ph.D.) in Physics or allied fields (ii) to be ready for a teaching profession in Physics (iii) to enter related industry.

Programme Specific Outcomes (PSOs)

1. Conceptual Mastery and Reasoning

- Fundamental Understanding: Upon completion of the course, students will be able to master the core concepts of physics.
- Specialized Knowledge: Students will grasp the foundational ideas within advanced and specialized sub-fields.

2. Experimental and Applied Competence

- Laboratory Skills: Students will acquire the proficiency to design and execute experiments across fundamental and advanced areas such as nuclear physics, condensed matter, nanoscience, lasers, and electronics.
- Practical Application: Students will possess the hands-on experience necessary to contribute effectively in various applied fields within the industry or technology sector.

3. Critical Thinking and Professional Readiness

- Analytical Mindset: The program will train students to develop critical thinking, enabling them to effectively analyze and solve problems in diverse professional domains beyond physics.

- Teaching and Research Proficiency: Graduates will obtain a comprehensive and deep command of the subject matter, qualifying them to teach physics competently at both the school and college levels or pursue doctoral studies.