

ISLAMIC UNIVERSITY OF SCIENCE AND TECHNOLOGY, AWANTIPORA



DEPARTMENT OF PHYSICS

Program Objectives and Outcomes

Master of Science (M.Sc) in Physics

Programme objectives

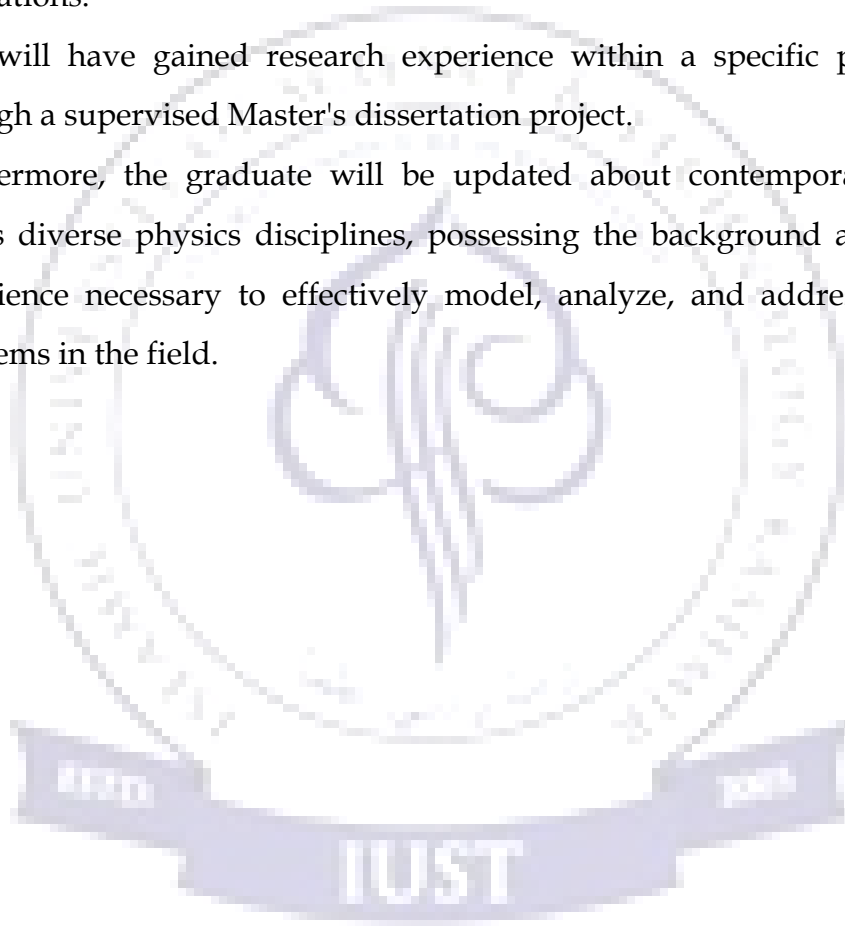
The Department of Physics is committed to imparting quality education in physics involving both theoretical as well as experimental approaches with special emphasis on 'learning by doing' to produce quality manpower for teaching and research. The specific objectives of the M.Sc. Physics Programme are:

- ❖ To enhance students' professional development, adaptability, and innovation through exposure to emerging trends in physics, and skill development by introducing skill-based courses, and comprehensive career readiness.
- ❖ To promote an interdisciplinary approach to problem-solving in physics, by enabling the students to recognize connections with other scientific disciplines, while concurrently instilling a robust commitment to ethical standards, emphasizing integrity, honesty, and responsible practices in all facets of academic and research work.
- ❖ To assist the students in acquiring basic knowledge in the specialized thrust areas such as Condensed Matter Physics and Nanoscience, Electronics, High Energy Physics, Radiation Physics and Applications, Plasma Physics and Astrophysics, and Advanced Nuclear Physics.
- ❖ Learning the most advanced experimental and modeling techniques of today's physics.
- ❖ Implementing a substantial amount of practical work, including exercises, laboratories, and personal or group projects, enhancing the learning experience by providing hands-on opportunities for students to apply theoretical concepts, develop critical skills, and gain practical insights into physics-based concepts.

Programme Outcomes

Upon successful completion of the M.Sc. Physics program,

- ❖ a student will have obtained extensive knowledge spanning various areas in physics, complemented by a foundational understanding of mathematics and advanced expertise in specialized physics domains.
- ❖ The graduate pass out will demonstrate ability to apply both theoretical and experimental methods, including proficiency in numerical techniques and simulations.
- ❖ they will have gained research experience within a specific physics field through a supervised Master's dissertation project.
- ❖ Furthermore, the graduate will be updated about contemporary research across diverse physics disciplines, possessing the background and practical experience necessary to effectively model, analyze, and address advanced problems in the field.



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DEPARTMENT OF PHYSICS

Program Objectives and Outcomes

Doctor of Philosophy (Ph.D) in Physics

Program objectives:

The Doctor of Philosophy (Ph.D.) program is the University's principal research degree for graduate students offered in most physics subfields by the Department of Physics. The principal program-specific objectives of the PhD program are as follows:

- A Ph.D. holder from the department will develop the skills necessary to conduct independent research in physics and different subfields and become a leader in the chosen careers.
- Develop the ability to identify, formulate, and solve challenging scientific and technical problems as encountered in physics and its subfields.
- Become proficient in reading the scientific literature and in oral and written communication of scientific results
- Make an original and significant contribution to knowledge in their discipline.
- Acquire and demonstrate a high degree of competence in the basic sciences, including nuclear, biophysics, astrophysics, and experimental and theoretical condensed matter physics.

Program outcomes:

Upon completion of the degree, students should demonstrate

- the ability to create and interpret new knowledge through original research or other advanced scholarship of a quality to satisfy peer review, covering the forefront of the discipline, and merit publication in the respective field of research.
 - the general ability to conceptualize, design, and implement a project for the generation of new knowledge, applications, or understanding at the forefront of the discipline, and to adjust the project design in light of unforeseen problems.
 - the creation of a PhD thesis for review, which they can successfully defend in an oral exam and earn a PhD.
 - a thorough comprehension of relevant research and advanced academic inquiry methodologies.
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