

 IILM UNIVERSITY

Greater Noida



**Ph.D. Program**

SCHOOL OF SCIENCES (SoSc)

# Ph.D. (Physics)

NEP (National Education Policy) 2020 - enabled curriculum

## Department of Physics

### List of Faculty Members

Sr. No	Name	Designation	Research Expertise
1	Dr. Nidhi Puri	Associate Professor & HOD	Nanomaterials, Energy storage devices, Immunosensors applications
2	Dr. Chhavi Pahwa	Associate Professor	Nanomaterials, exchange-coupled composite ferrite. Magnetic and high frequency magnetodielectric studies.
3	Dr. Shikha Kumari	Assistant Professor	Complex Systems, Granular Matter, Spin Systems.
4	Dr. Priti Singh	Assistant Professor	ECR Hydrogen Plasma, Nanozyme-based colorimetric sensor
5	Dr. Parminder Singh	Assistant Professor	Magnetoelectric, piezoelectric, and ferroelectric phenomena with applications in energy storage and harvesting
6	Dr. Kushal Mazumder	Assistant Professor	2D Materials - TMD, van der Waals heterostructures, Hydrothermal and CVD Growth of 2D nanomaterials for hydrogen evolution and fuel cell
7	Dr. Pawan Kumar Soni	Assistant Professor	Hydrogen Storage, Hydrogen Production and synthesis, DFT (VASP) study of Exotic Materials for energy storage applications
8	Dr. Khushboo Gupta	Assistant Professor	Synthesis and characterization Perovskite, Ferrites, 2D carbon and metal oxides materials for Energy storage and Conversion applications
9	Dr. Vibhav Narayan Singh	Assistant Professor	Non-Hermitian and Fractional Quantum Mechanics; Fractal and 2D-Graphene Tunneling.
10	Dr. Sanjeev Kumar Verma	Assistant Professor	High Temperature Cuprate Superconductivity
11	Dr. Vipul Kumar Pandey	Assistant Professor	Field Theory, String Theory, Gravity, Mathematical Physics
12	Dr. Dhiraj Yadav	Assistant Professor	Quantum optics with expertise in quantum interferometry and quantum information, generation and characterization of non-classical states of light.

## **IILM University, Greater Noida**

IILM University provide students with an education that is both intellectually stimulating and practically relevant. We equip learners with the knowledge, skills, and experiences needed to achieve their full potential and make a meaningful difference in the world. Through a wide range of innovative programs, we prepare students for successful careers while inspiring them to create a positive social impact. True to our values, we foster an inclusive and diverse learning community that is deeply committed to responsibility, leadership, and lifelong learning.

### **School of Sciences**

The School of Sciences at IILM University, Greater Noida offers a unique blend of academic rigor, interdisciplinary learning, and industry relevance. With programs such as B.Sc., M.Sc., and Ph.D. in various streams of Physics, Chemistry, Mathematics and Forensic Science, the school equips students with strong theoretical foundations and practical skills. Supported by modern laboratories, research opportunities, internships, and skill-based workshops, students gain real-world exposure and hands-on experience from the very beginning of their academic journey.

Set in a vibrant 26-acre green campus, the School fosters holistic development through cultural events, student clubs, sports, and leadership activities. Highly qualified faculty with PhD backgrounds bring both academic expertise and industry insights to the classroom, while strong industry linkages, global alumni connections, and a legacy of 30+ years ensure excellent career pathways. In essence, the School of Sciences is where curiosity meets innovation and students are empowered to become scientists, researchers, and leaders of tomorrow.

### **About the Program**

The Ph.D. in Physics program at the Department of Physics, School of Sciences, IILM University, Greater Noida, is designed to develop advanced research skills and in-depth knowledge across fundamental and applied areas of physics. This doctoral program emphasizes original research that contributes to the advancement of scientific understanding and technological innovation.

Under the guidance of experienced faculty, scholars engage in rigorous research in diverse areas such as condensed matter physics, materials science, nanotechnology, optics and photonics, computational physics, quantum technologies, and interdisciplinary domains including energy science and AI-driven physics. The program fosters critical thinking, analytical skills, and the application of modern experimental and computational techniques to address complex scientific challenges. The core of the Ph.D. program is the development of an original research thesis that contributes to existing knowledge or offers novel insights in the field. Scholars are trained in

research design, data analysis, scientific writing, and effective presentation of their findings in academic and professional platforms. The program also emphasizes ethical research practices, scientific integrity, and innovation. Upon completion, candidates are required to defend their research work before an expert panel.

The program promotes interdisciplinary research in energy science (such as advanced batteries and supercapacitors), environmental physics, and biophysics, with growing emphasis on data-driven and AI-enabled approaches. With a strong focus on innovation, high-quality publications, and real-world impact, the department provides a dynamic research environment supported by modern facilities and expert faculty, preparing scholars for successful careers in academia, research institutions, and industry.

Graduates of the Ph.D. program are well-prepared for careers in academia, advanced research institutions, high-technology industries, and leadership roles in government and private sectors. The program aims to cultivate highly skilled researchers and subject experts who contribute to scientific advancement and address global technological challenges.

## Course Eligibility

M.Sc. Physics / related domain with 55% marks or M.Phil. with 55% marks

## Duration

Minimum 3 years (1 Year Course Work + 2 Years Research Work)

## Mode of Selection

Selection to the Ph.D. Programme in Physics shall be made through a two-stage process:

- **Entrance Examination:** Eligible candidates shall be required to appear in the University Entrance Examination / accepted national-level eligibility test as per UGC norms.
- **Interview / Viva-Voce:** Candidates shortlisted on the basis of the entrance examination shall be called for a personal interview / viva-voce before the duly constituted Selection Committee.

The final selection shall be based on the combined performance in the entrance examination and interview, in accordance with UGC regulations and University norms.

## Program Highlights

### Major Types of Course to be taught

- The Ph.D. coursework shall comprise University Core Courses in **Semester I**, focusing on Research Methodology, Research and Publication Ethics, and Statistics and Computer Application.
- **Semester II** shall include domain-specific courses covering advanced concepts and recent developments in Physics and the chosen area of specialization, such as condensed matter physics, materials science, nanotechnology, optics and photonics, computational physics, quantum technologies, energy science, and other emerging interdisciplinary areas relevant to the research topic.

The coursework will be designed in accordance with UGC guidelines, which mandate a minimum of 14 credits, to ensure strong research aptitude and subject expertise before commencement of doctoral research.

### Career Option

The Ph.D. in Physics program opens up advanced career opportunities in research, academia, and high-technology industries. Graduates gain specialized knowledge and strong research expertise, enabling them to take up senior and leadership roles in scientific and technological domains.

They can work as Physicists, Research Scientists, Academic Faculty, Data Scientists, Materials Scientists, and Consultants in emerging technology sectors. They may also pursue specialized roles in areas such as condensed matter physics, nanotechnology, quantum technologies, computational physics, optics and photonics, and energy science. Ph.D. graduates are employed in universities, research institutions, national laboratories, space and defense organizations, government agencies, and private sector industries including R&D and advanced technology firms.

The program also prepares candidates for independent research, innovation, consultancy, and advisory roles, contributing to scientific advancement and technological development at national and global levels.

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