

Programme Outcomes, Programme Specific Outcomes and Course Outcomes For M.Phil Programmes

Programme Name: *M.Phil. in Physics*

(e.g M.Phil in Bengali)



Name of the Department
University of North Bengal
West Bengal, INDIA

Programme Outcomes

- Instil among the students an attitude of being inquisitive, so that they can think independently and critically.
- Train-up the students in such a way that they can objectively carry out investigations, scientific and/or otherwise, without being biased or without having any preconceived notions.
- Equip the students with such skills as to make them understand the mysteries of nature at different scales of space and time, from subnuclear to cosmological.
- Enable the students to analyze problems starting from first principles, evaluate and validate experimental results, and draw logical conclusions thereof.
- Prepare and motivate the students to advance their research careers to a doctoral degree, pursue careers in academics and industries.
- As technology exploits the rules of physics, students properly trained in physics research can be good value addition in the field of technology too.
- Imbibe effective scientific and/or technical communication abilities among the students.
- Make the students understand that acquiring knowledge and skills appropriate to their professional activities is a never ending process.
- Inspire them in such a way that they can demonstrate and maintain the highest standard on ethical issues in their professional lives.
- Create an awareness among the students to be persons of integrity, to be responsible and enlightened citizens with a commitment to deliver good to the society within the scope of the bestowed rights and privileges.

Programme Specific Outcomes

- Understand the mysteries of nature in terms of the fundamental principles, hypotheses and laws of physics.
- Inculcate logical reasoning among the students and help them develop such skills as to quantitatively solve a problem.
- Train the students over a wide range of analytical, experimental and computational techniques that can be applied in physics, in other scientific and technological domains.
- Develop problem solving skills, ability of independent thinking and nurture creativity.
- Mature as a researcher having reasonably good communication skills.

Course Outcomes

SEMESTER—I		
Course Code	Course Name	Course Outcomes
PHY-101	Computer Applications	<ul style="list-style-type: none"> The students are trained (i) to work in Linux environment, (ii) to work in Excel worksheets and simulate random numbers and their use (iii) to work with Excel and Origin graphics packages, (iv) to perform numerical techniques, simulations and animated graphics and writing necessary scripts in Matlab. This training makes the student competent to analyse and simulate data, make them presentable graphically and with animation if required in their respective field of research.
PHY-102	Quantitative Methods	<ul style="list-style-type: none"> The students are trained with the basic ideas of probability and statistics, so that they can apply these techniques to analyze data for their research problems, write down the necessary codes and test hypotheses.
PHY-103	Adv. Level Sub. Specific Course	<ul style="list-style-type: none"> A details course is included on advanced characterization equipments as the instruments like, X-ray diffractometer, Scanning Electron Microscope, Atomic Force Microscope, Transmission Electron Microscope are very important to study as they are directly linked to the material development
PHY-104	Adv. Level Sub. Specific Course	<ul style="list-style-type: none"> A reasonably good idea on the formation and characterization of Quark-gluon plasma is given. Statistical, thermodynamic and hydrodynamic aspects of this exotic state of matter are explained. Recent developments in this field of research are discussed.

SEMESTER—II		
Course Code	Course Name	Course Outcomes
PHY-201 - 204	Adv. Level Sub. Specific Course	<ul style="list-style-type: none"> Teachers demonstrate their research topic to students in the field of liquid crystal theory and experiments The students are equipped so that they are able to pursue independent research work.

SEMESTER—III		
Course Code	Course Name	Course Outcomes
PHY-301	Review of published papers	<ul style="list-style-type: none"> The students are required to review and/or independently work out the problems available in published papers under the supervision of one or more faculty members of the department. The objective/outcome of this course is to make a student aware about the seminal and/or frontline works in a particular area of research, and train her/him for solving new research problems.
PHY-302	Review of published thesis	<ul style="list-style-type: none"> The students are required to review and/or independently work out the problems contained in the Ph.D. thesis under the supervision of one or more faculty members of the department.

		<ul style="list-style-type: none"> The objective/outcome of this course is to make a student aware about the frontline works in a particular area of research, and train her/him for solving new research problems.
SEMESTER—IV		
Course Code	Course Name	Course Outcomes
PHY-400	Dissertation	<ul style="list-style-type: none"> Students are required to carry out a dissertation work on a particular topic relating to current day research and submit a report. If found suitable, the report is sent to journals for publication Hence, they get a first-hand experience of working on a real life a research topic