SIDHO-KANHO-BIRSHA UNIVERSITY

DEPARTMENT OF PHYSICS

CBCS Syllabus for two years M.Sc. Course in Physics

2023

POST GRADUATE PROGRAM IN PHYSICS

Post Graduate program is the gateway to enormous possible entries to research. This program is also structured in that direction.

Program objective:

- Emphasize comprehensive understanding of the fundamental principles and concepts of physics.
- From third semester onward, more & more advanced and special topics are introduced, which have vast area of applications in basic research as well as industry.
- Enhance the ability and confidence of the students to perform in various competitive exams for higher studies.
- Provide a glimpse of research experience.
- Make students aware of their responsibilities to the society in scientific perspective.

Program outcome:

- During the course students would learn to apply the acquired knowledge and concepts in practical problems.
- Experiments in the special topics will provide hand on experiences on advance instruments, cutting edge technology and special techniques. These would develop analytical skills to work in the experimental areas of R&D sector.
- Occasionally arranged lectures on contemporary research topics by various experts would motivate students for higher studies.
- Computational skills acquired would be of immense use while working with theoretical areas of physics as well as experimental physics.
- Students would be geared towards various competitive exams including UGC-CSIR NET/GATE/SET/JEST for future research or professional career.
- The outreach program would improve their communication skills.
- Participation in Project work during the course would develop scientific temper, independent thinking, writing skills, communication skills within the students.

M.Sc. (Physics) Course Structure

Semester	Course	Course Title	Lecture Hrs./Week	Tutorial Hrs./ Week	Practical Hrs./ Week	Credit	Total Marks
I	MPHYCCT 101	Mathematical Physics	3	1	0	4	50
	MPHYCCT 102	Classical & Relativistic Mechanics	3	1	0	4	50
	MPHYCCT 103	Quantum Mechanics I	3	1	0	4	50
	MPHYCCT 104	Electronics & Instrumentation	3	1	0	4	50
	MPHYCCS 105	Physics Practical I	0	0	8	4	50
	MPHYCCS 106	Physics Practical II	0	0	8	4	50
II	MPHYCCT 201	Classical and Applied Electrodynamics	3	1	0	4	50
	MPHYCCT 202	Quantum Mechanics II	3	1	0	4	50
	MPHYCCT 203	Atomic, Molecular & Optical Physics	3	1	0	4	50
	MPHYCCT 204	Solid State Physics	3	1	0	4	50
	MPHYCCS 205	Physics Practical III	0	0	8	4	50
	MPHYCCS 206	Physics Practical IV	0	0	8	4	50
III	MPHYCCT 301	Nuclear & Particle Physics	3	1	0	4	50
	MPHYCCT 302	Statistical Mechanics	3	1	0	4	50
	MPHYMET 303	Elective I[a]	3	1	0	4	50
	MPHYMES 304	Advanced Experiments	0	0	8	4	50
	MPHYOET 305	Open Elective Course[b]	4	0	0	4	50
	MPHYOPT 306	Outreach Program	4	0	0	4	50
IV	MPHYCCT 401	Numerical Methods & Computational Physics	4	0	0	4	50
	MPHYCCT 402	Relativity, Cosmology, and Astrophysics	3	1	0	4	50
	MPHYMET 403	Elective II[c]	3	1	0	4	50
	MPHYMEP 404	Add-On Course: Fundamentals and Applications of Computer Systems	2/4	0	4/0	4	50
	MPHYCCS 405	Computer Practical	0	0	8	4	50
	MPHYACT 406	Project/Term Paper and Grand Viva	4	0	0	4	50
Grand Total						96	1200

- [a]**Elective – I:** Advanced Electronics I/ Photonics I/ Condensed Matter Physics/ Quantum Field Theory
- [b]**Open Elective Course:** Nature of the Universe/ Concepts of Physics: Inventions and Applications
- [c]**Elective – II:** Advanced Electronics II/ Photonics II/ Nano Science and Technology/ High Energy Physics