Pre-doctoral Programme (M.Phil.PHYSICS)
Programme Outcomes (POs)

PO	Upon completion of M.Phil degree programme, the graduates will be able to:
PO – 1	Develop an interest in research and implement various techniques to find new theories and theorem in recent research programme.
PO – 2	Handle equipments needed for material preparation, characterization and to analyze and interpret the data with theoretical background and software.
PO – 3	Apply the scientific context to develop innovative ideas, products and methods for the benefits of society.
PO – 4	Demonstrate a thorough understanding of research methodologies and techniques at an advanced level.
PO – 5	Demonstrate critical understanding, at an advanced level, of-up-to-date knowledge and research methodology of a particular field.
PO – 6	Implement effective academic and personal strategies for carrying out research projects independently and ethically.
PO – 7	Develop and enhance their communicative skills and teaching abilities

Program Specific Outcomes:

PSO NO.	Upon Completion of M.Phil Physics Degree Programme, the Graduates will be able to:	Mapping
PSO-1	Equip themselves to good communication skills and teaching abilities	PO-7
PSO-2	Design and conduct experiments as well as interpret data statistically. Communicate effectively the research findings to the scientific community.	PO-2, PO-3
PSO-3	Adopt Blooms Taxonomy in educational objectives and in setting question papers.	PO-3, PO-6,PO-7
PSO-4	Pursue Ph.D programme with norms of scholarly research that chip in to the augmentation of students personal and professional development.	PO-1
PSO-5	Evolve as excellent professionals in the public sector units BARC/ISRO/DRDO/CSIR laboratories and contribute towards the scientific growth of the country	PO-3,PO-6
PSO-6	Develop and enhance leadership qualities and teaching skills	PO-6, PO-7
PSO-7	Find placement in software firms, engineering and electronics industries and educational institutions.	PO-3,PO-6
PSO-8	Apply their knowledge in the process of developing new materials as well as gain expertised of well defined area of research in Physics.	PO-1, PO-3

Semester -1 **Course Outcomes (Cos)**
Research and Teaching Methodology Subject Code: 18MCPH11

CO No.	Upon Completion of this course, the students will be able to:	PSO Addressed	Cognitive Level
CO-1	Outline the basics of research and the role of research guide and researcher.	PSO-4,8	Understanding
CO-2	List the scholarly research article and open source software and freely licensed software for research work and data analysis.	PSO-2,7	Remembering
CO-3	Examine various methods of data analysis for solving the statistical problems.	PSO-2,3	Analyzing
CO-4	Determine the solution of transcendental and differential equations through various numerical methods.	PSO-2,8	Evaluating
CO-5	Formulate the various methodology of teaching.	PSO-1,6	Creating

ADVANCED PHYSICS Subject Code: 18MCPH11

CO No.	Upon Completion of this course, the students will be able to:	PSO Addressed	Cognitive Level
CO-1	Summarize the main sources of energy and their primary applications in the world.	PSO-2	Understanding
CO-2	Recall the production, properties and sources of X-Rays.	PSO-4	Remembering
CO-3	Explain the basic principles of Laser and types of Laser.	PSO-2,6	Evaluating
CO-4	Elaborate the important features of various nuclear models.	PSO-6,8	Creating
CO-5	Measure the various crystal parameters using XRD, FTIR, DSC, VSM and SEM.	PSO-4,8	Evaluating

CRYSTAL GROWTH METHODS AND CHARACTERIZATION TECHNIQUES
Subject Code: 18MEPH1

CO No.	Upon Completion of this course, the students will be able to:	PSO Addressed	Cognitive Level
CO-1	Demonstrate the formation, classification, theories of nucleation and kinetics of crystal growth.	PSO-2,8	understanding
CO-2	Utilize various methods to grow the crystal from solution.	PSO-1,2	Applying
CO-3	Analyze various techniques for the growth of crystal from melt.	PSO-5,7	Analyzing
CO-4	Explain the important applications of crystal.	PSO-8	Evaluating
CO-5	Discuss the various techniques for structural and characterization analysis of crystals.	PSO-7	Creating

NANO PHYSICS   Subject Code:18MEPH1B

CO No.	Upon Completion of this course, the students will be able to:	PSO Addressed	Cognitive Level
CO-1	Outline the concepts of nano materials, nanostructures and nanotechnology.	PSO-8	understanding
CO-2	Identify the physical and chemical techniques for synthesis of nano-materials.	PSO-2,8	Applying
CO-3	Analyze the electrical, mechanical, thermal, optical and anti-bacterial properties of nano-matrials.	PSO-5	Analyzing
CO-4	Apply the electronic microscopy, scanning probe microscopy and nano indentation techniques to characterize the nano-materials and nanostructures.	PSO-2,3	Applying
CO-4	Discuss the important applications of nano materials in various fields.	PSO-1,2,8	Creating

ULTRASONIC STUDIES   Subject Code:18MEMA1C

CO No.	Upon Completion of this course, the students will be able to:	PSO Addressed	Cognitive Level
CO-1	Demonstrate the preparation of binary and ternary liquid mixtures and the working details of ultrasonic interferometer.	PSO-2,8	Understanding
CO-2	Recall the volumetric properties of liquid mixtures.	PSO-8	Remembering
CO-3	Analyze the properties related to Ultrasonic studies of liquid mixtures.	PSO-2	Analyzing
CO-4	Discuss the Viscometric properties and Molecular interactions of liquid mixtures.	PSO-2,8	Creating
CO-5	Explain the intermolecular interactions between the components of liquid mixtures.	PSO-5	Evaluating

NONLINEAR DYNAMICS   Subject Code:18MEMA1D

CO No.	Upon Completion of this course, the students will be able to:	PSO Addressed	Cognitive Level
CO-1	Outline the behavior of linear and Non-linear oscillators.	PSO-2,3,8	Understanding
CO-2	Recall the types of some simple bifurcations and various routes to chaos.	PSO-2	Remembering
CO-3	Examine the occurrence of chaos in some conservative systems.	PSO-4,8	Analyzing
CO-4	Explain the important properties and the construction of some fractals.	PSO-4	Evaluating
CO-5	Discuss the properties and applications of Solitons.	PSO-5	Creating