

BSc PHYSICS - COURSE OUTCOMES (COs)

PHY1 B01: MECHANICS – I

Semester: 1

Number of hours of Lectures per week: 2

Number of Credits: 2

Number of Contact Hours: 36

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand and apply the basic concepts of Newtonian Mechanics to Physical Systems
CO2	Understand and apply the basic idea of work-energy theorem to physical systems
CO3	Understand and apply the rotational dynamics of rigid bodies

PHY 2 B02: MECHANICS – II

Semester: 2

Number of hours of Lectures per week: 2

Number of Credits: 2

Number of Contact Hours: 36

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand the features of non-inertial systems and fictitious forces
CO2	Understand and analyze the features of central forces with respect to planetary forces
CO3	Understand the basic ideas of Harmonic Oscillations
CO4	Understand the analyze the basic concepts of wave motion

PHY3B03: ELECTRODYNAMICS I

Semester: 3

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand and apply the fundamentals of vector calculus
CO2	Understand and analyze the electrostatic properties of physical systems
CO3	Understand the mechanism of electric field In matter.

CO4	Understand and analyze the magnetic properties of physical systems
CO5	Understand the mechanism of magnetic fields in matter.

PHY4B04: ELECTRODYNAMICS II

Semester: 4

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand the basic concepts of electrodynamics
CO2	Understand and analyze the properties of electromagnetic waves
CO3	Understand the behavior of transient currents
CO4	Understand the basic aspects of ac circuits
CO5	Understand and apply electrical network theorems

PHY4B05 Practical-I (Credit 5)

Semester: 1,2,3 &4

Number of hours of Lectures per week: 2

Number of Credits: 5

Number of Contact Hours: 36 hours in each semester

Course Evaluation: Internal – 20 Marks + External – 80 Marks

COURSE OUTCOMES

CO1	Apply and illustrate the concepts of properties of matter through experiments
CO2	Apply and illustrate the concepts of electricity and magnetism through experiments
CO3	Apply and illustrate the concepts of optics through experiments
CO4	Apply and illustrate the principles of electronics through experiments

PHY5B06: COMPUTATIONAL PHYSICS

Semester: 5

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

CO1	Understand the Basics of Python programming
CO2	Understand the applications of Python modules
CO3	Understand the basic techniques of numerical analysis
CO4	Understand and apply computational techniques to physical problems

PHY5 B07: QUANTUM MECHANICS

Semester: 5

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand the particle properties of electromagnetic radiation
CO2	Describe Rutherford – Bohr model of the atom
CO3	Understand the wavelike properties of particles
CO4	Understand and apply the Schrödinger equation to simple physical systems
CO5	Apply the principles of wave mechanics to the Hydrogen atom

PHY5 B08: OPTICS

Semester: 5

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand the fundamentals of Fermat's principles and geometrical optics
CO2	Understand and apply the basic ideas of interference of light
CO3	Understand and apply the basic ideas of diffraction of light
CO4	Understand the basics ideas of polarization of light
CO5	Describe the basic principles of holography and fiber optics

PHY5 B09: ELECTRONICS (ANALOG & DIGITAL)

Semester: 5

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand the basic principles of rectifiers and dc power supplies
CO2	Understand the principles of transistor
CO3	Understand the working and designing of transistor amplifiers and oscillators
CO4	Understand the basic operation of Op –Amp and its applications
CO5	Understand the basics of digital electronics

PHY5D01(2): AMATEUR ASTRONOMY AND ASTROPHYSICS

Semester: 5

Course Number: Open course I

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 10 Marks + External – 40 Marks

COURSE OUTCOMES

CO1	Describe the history and nature of astronomy as a science
CO2	Understand the motion of earth in space and the cause of seasons
CO3	Understand the basic elements of solar system
CO4	Understand the elementary concepts of solar system

PHY6 B10: THERMODYNAMICS

Semester: 6

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand the zero and first laws of thermodynamics
CO2	Understand the thermodynamics description of the ideal gas
CO3	Understand the second law of thermodynamics and its applications
CO4	Understand the basic ideas of entropy
CO5	Understand the concepts of thermodynamic potentials and phase transitions

PHY6B11: STATISTICAL PHYSICS, SOLID STATE PHYSICS, SPECTROSCOPY & PHOTONICS

Semester: 6

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand the basic principles of statistical physics and its applications
CO2	Understand the basic aspects of crystallography in solid state physics
CO3	Understand the basic elements of spectroscopy
CO4	Understand the basic ideas of microwave and infrared spectroscopy
CO5	Understand the fundamental ideas of photonics

PHY6 B12: NUCLEAR PHYSICS AND PARTICLE PHYSICS

Semester: 6

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand the basic aspects of nuclear structure and fundamentals of radioactivity
CO2	Describe the different types of nuclear reactions and their applications
CO3	Understand the principle and working of particle detectors
CO4	Describe the principle and working of particle accelerators

CO5	Understand the basic principles of elementary particle physics
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PHY6B13: RELATIVISTIC MECHANICS AND ASTROPHYSICS

Semester: 6

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

COURSE OUTCOMES

CO1	Understand the fundamental ideas of special relativity
CO2	Understand the basic concepts of general relativity and cosmology
CO3	Understand the basic techniques used in astronomy
CO4	Describe the evolution and death of stars
CO5	Describe the structure and classification of galaxies

PHY6B14 (EL3): MATERIALS SCIENCE

Semester: 6

Number of hours of Lectures per week: 3

Number of Credits: 3

Number of Contact Hours: 54

Course Evaluation: Internal – 15 Marks + External – 60 Marks

CO1	Understand the basic ideas of bonding in materials
CO2	Describe crystalline and non crystalline materials
CO3	Understand the types of imperfections and diffusion mechanisms in solids
CO4	Describe the different properties of ceramics and polymers
CO5	Describe the different types of material analysis techniques

PHY6B15: PRACTICAL II

Semester: 5 & 6

Number of hours of Lectures per week: 4

Number of Credits: 5

Number of Contact Hours: 72

Course Evaluation: Internal – 20 Marks + External – 80 Marks

COURSE OUTCOMES

CO1	Apply and illustrate the principles of semiconductor diode and transistor through experiments
CO2	Apply and illustrate the concepts of electricity and magnetism through experiments
CO3	Apply and illustrate the concepts of optics and spectroscopy through experiments
CO4	Apply and illustrate the principles of heat through experiments

PHY6B16: PRACTICAL III

Semester: 5 & 6

Number of hours of Lectures per week: 4

Number of Credits: 5

Number of Contact Hours:72

Course Evaluation: Internal – 20 Marks + External – 80 Marks

CO1	Apply and illustrate the principles of semiconductor diode and transistor through experiments
CO2	Apply and illustrate the principles of transistor amplifier and oscillator through experiments
CO3	Apply and illustrate the principles of digital electronics through experiments
CO4	Analyze and apply computational techniques in Python programming

