



Programme Specific Outcomes (PSOs) for B.Sc. Physics

Sl. No.	On completing B.Sc. Physics, the student will be able to:
PSO-1	Comprehend physics principles and their applications in the problems of everyday life.
PSO-2	Possess industry-specific skills for the existing industrial jobs, and for developing new technologies.
PSO-3	Understand the advanced methods of scientific inquiry and develop skills for extensive research.
PSO-4	Know mathematical methods so as to assess the advanced theories and provide deductions.
PSO-5	Develop skills for understanding scientific literature and creating scientific communication in the written & through hands on experiment.
PSO-6	Not only stitch a fragmented problem into a complete one, but also create alternate solutions in diverse fields of physical, biological and social sciences.

Course Outcomes (COs): B.Sc. Physics
Semester I
Course Code-PHSG
Paper: C1

Course Title: Vectors, Mechanics (Unit-I)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Understand and apply the concepts of vector calculus including various differential operators like Gradient, Divergence, Curl their physical meanings. The idea of vector integration and related theorems like Gauss's divergence theorem, Stoke's theorem and Green's theorem	PSO-1, PSO-4
CO-2	Understand the concepts of moment of inertia & radius of gyration, parallel and perpendicular axes theorem and apply them to industrial and day-to-day life situations	PSO-1, PSO-4

Course Title: Gravitation, Elasticity and Fluid (Unit-II)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Get some idea about gravitational field and potential, Applications of Gauss's theorem Understand the concepts of elasticity and various kinds of elastic moduli, concept of twisting, bending, and depressions produced in cantilever and double beam. The knowledge so acquired can be utilized to understand the some physical phenomena in daily life.	PSO-1, PSO-3, PSO-4,
CO-2	Get the idea of surface tension, surface energy, their relation, meaning of excess pressure, explanation of various common phenomena using this concept, experimental techniques employed for the determination of surface tension	PSO-1, PSO-2, PSO-3
CO-3	An important property of fluid viz. viscosity, Poiseulli's equations, Stoke's law, terminal velocity	PSO-1, PSO-2, PSO-3

Course Title: Thermodynamics and Radiation (Unit-III)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Apply the laws of thermodynamics in various processes / systems (in day-to-day phenomena) to calculate. Role of p-V diagram to calculate the efficiency of Carnot's engine, Limitations of first law of thermodynamicsthe work done/ internal energy	PSO-1, PSO-3, PSO-4
CO-2	Understand the basic concepts of thermodynamics such as state variables, state of a system, work done and internal energy Analyse the performance of heat engines, refrigerators, and their components using the first law of thermodynamics	.



CO-3	Understand Carnot's theorem and Absolute scale of temperature, concept of entropy and change of entropy, calculation of the change of entropy in a number of cases	PSO-1, PSO-6
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Course Title: Optics (Unit-IV)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Understand the basics of Geometrical optics including refraction from spherical surfaces, thin lenses and their combination	PSO-1, PSO-3, PSO-4
CO-2	Get a preliminary idea about the wave theory of light including the interference of light & Young's experiment	PSO-1, PSO-3, PSO-4
CO-3	Understand the various kinds of interference demonstrative experiments, related numerical problems	PSO-1, PSO-6

**Course Outcomes (COs): B.Sc. Physics
Semester II
Course Code-PHSG
Paper- 201 (A)**

Course Title: Acoustic (Unit-I)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Get elementary idea about SHM its differential equation and solution, composition of SHM, Lissajou's figures, damped and forced vibration and their related discussion.	PSO-1, PSO-3, PSO-4
CO-2	Application of resonance, Idea about quality factor, sharpness of resonance	PSO-1, PSO-3, PSO-4
CO-3	Application of acoustics of building, Growth and decay of sound intensity, Idea of reverberation, reverberation time and Sabine's law, Characteristics of a good auditorium	PSO-1, PSO-6
CO-4	Analyse the acoustics of a room, large or small; presence of noise and its elimination.	PSO-2, PSO-3

Course Title: Electrostatics, Magneto statics, Magnetic effect of Current(Unit-II)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Know about Coulomb's theorem, mechanical force on a charged surface, energy per unit volume.	PSO-2, PSO-3, PSO-4
CO-2	Get basic idea of working of a capacitor, calculation of capacitance in some cases, idea about the electrometers.	PSO-2, PSO-3, PSO-5
CO-3	Get some elementary idea about various terminology on magnetism like permeability, Hysteresis.	PSO-2, PSO-3
CO-4	Know how to determine experimentally the thermal conductivity of a bad conductor using Lees and Choltson's method	PSO-5
CO-5	Determine the coefficient of viscosity of a given liquid (Poiseulli's method) using experimental techniques	PSO-5

**Course Outcomes (COs): B.Sc. Physics
Semester II
Course Code-PHSG
Paper- 201 (B)**

Non-Electrical Practical

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Demonstrate how to work with basic measuring instruments like slide callipers, screw-gauge, spherometer, travelling microscope, physical balance	PSO-5
CO-2	Determine experimentally values of various material characteristics like refractive index, focal length, moment of inertia, rigidity modulus, Young's modulus, viscosity etc.	PSO-5

**Course Outcomes (COs): B.Sc. Physics
Semester III
Course Code-PHSG
Paper- 301 (A)**

Course Title: Current Electricity I (Unit-I)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Understand the various theories behind some thermoelectric phenomena, Inter-relation, thermoelectric power, applications of thermo-couple.	PSO-1, PSO-2, PSO-3, PSO-4
CO-2	Understand the phenomenon electromagnetic induction, Calculation of self and mutual inductances in a number of cases	PSO-1, PSO-2, PSO-3, PSO-4
CO-3	Understand the basics behind the charging and discharging of a capacitor in a series LCR circuit considering various conditions	PSO-1, PSO-2, PSO-3

Course Title: Current Electricity II and Atomic theory (Unit-I)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Analyse AC circuits with circuit elements and their combinations, theory of transformer and its applications	PSO-1, PSO-2, PSO-3, PSO-4
CO-2	Explain the phenomenon like normal and anomalous Zeeman effect using the quantum theory, they will be able to conclude about the number of lines to be obtained in normal and anomalous Zeeman effect for a given transition	PSO-1, PSO-2, PSO-3

**Course Outcomes (COs): B.Sc. Physics
Semester III
Course Code-PHSG
Paper- 301 (B)**

Electrical Practical

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Demonstrate how to work with basic electrical instruments like ammeter, voltmeter, galvanometer, tangent galvanometer, magnetometer, potentiometer, meter bridge, etc.	PSO-5
CO-2	Determine experimentally values of unknown resistance, end correction of meter bridge, Carey-Foster's bridge, small current using potentiometer, reduction factor using tangent galvanometer etc.	PSO-5

Course Outcomes (COs): B.Sc. Physics
Semester IV
Course Code-PHSG
Paper- 401 (A)

Course Title: Electronics (Unit-I)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Analyse the working of PNP and NPN transistor, current components in a junction transistor CB, CE and CC configurations of transistor and their comparison.	PSO-1, PSO-2, PSO-3, PSO-4
CO-2	Understand the construction, working and industrial applications of FETs	PSO-1, PSO-2, PSO-3, PSO-4
CO-3	Understand Operational amplifier, concept of virtual ground, applications of OP-AMPS.	PSO-1, PSO-2, PSO-3

Course Title: Relativity and Nuclear Physics (Unit-II)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Get a detailed idea of Michaelson -Morley's experiment and its necessity, postulates of special theory of relativity, Idea of Lorentz's transformation, relativity of simultaneity length contraction and time dilation, addition of velocities, variation of mass with velocities, equivalence of mass and energy	PSO-1, PSO-2, PSO-3
CO-2	Analyse the concept of Q-equation in different nuclear reactions, and understand the radioactive decay of alpha, beta and gamma rays, and their fine structure spectrum	PSO-1, PSO-2, PSO-3, PSO-4

Course Outcomes (COs): B.Sc. Physics
Semester IV
Course Code-PHSG
Paper- 401 (B)

Electronics Practical

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Demonstrate working of p-n junction diode, triode valve, transistor, Field effect transistor, realization of basic logic gates using discrete components like diode, resistor, LEDs etc.	PSO-5

**Course Outcomes (COs): B.Sc. Physics
Semester V
Course Code-PHSG
Paper- 501 (A)**

Course Title: Electromagnetic theory Laser, Computer Science, Programming and Digital Electronics(Unit-I)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Analyse the importance of existence of displacement current, Idea of Maxwell's electromagnetic induction, propagation of plain electromagnetic waves in free space	PSO-1, PSO-2, PSO-3, PSO-4
CO-2	Analyse the concept laser action, conditions required, Einstein's A, B co-efficients	PSO-1, PSO-2, PSO-3, PSO-4
CO-3	Get some elementary idea about the optical fibre, its type, various terminology	PSO-1, PSO-2, PSO-3
CO-4	Understand foundation concepts of information and information processing in computer systems: a matter of information, data representation, coding systems Understand of programming language syntax and its definition by example of BASIC language.	PSO-1, PSO-2, PSO-3

Course Title: Quantum Mechanics I and Quantum Mechanics II (Unit-II)

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Understand physical situations where classical physics fails, and how quantum concepts explain it.	PSO-1, PSO-2, PSO-3, PSO-4
CO-2	Understand the mathematical basis of quantum theory and concept of probabilistic approach	PSO-1, PSO-2, PSO-3, PSO-4

**Course Outcomes (COs): B.Sc. Physics
Semester V
Course Code-PHSG
Paper- 501 (B)**

Computer Practical

Sl. No.	On completing the course, the student will be able to:	PSOs addressed
CO-1	Understand foundation concepts of information and information processing in computer systems: a matter of information, data representation, coding systems	PSO-5
CO-2	Understand of an algorithm and its definition.	PSO-5
CO-3	Understand of programming language syntax and its definition by example of BASIC language.	PSO-5
CO-4	Know of basic principles of imperative and structural programming,	PSO-5
CO-5	Write simple programs in BASIC language by using basic control structures (conditional statements, loops, branching, etc.).	PSO-5
CO-6	Create a programmable model for a problem given. Basic knowledge of working with arrays in BASIC language. Handle possible errors during program execution.	PSO-5



Women's College (Affiliated to Tripura University)
Agartala-799 001, Tripura

Department of Physics
