

DSDD Arts College and Commerce & Science College, Wada, Dist. Palghar

Teaching Plan Year (2024–2025) Semester: V

Department: Physics Duration of Teaching: June 2024 to December 2025

Class: T.Y.B.Sc. Subject: Physics Practical's

Course: USPHP05-06

Name of Faculty :Kailas P.Joshi

Sr. No.	GROUPS	Topics	Lectures per Week	Duration
1.	A/B	Determination of 'g' by Kater's pendulum	Lectures per Week 8	2 Hours for each Practical
2.		Elastic constants of a rubber tube		
3.		Logarithmic decrement		
4.		Velocity of sound in air using CRO		
5.		L/C by Maxwell's bridge		
6.		LM 317 as constant current source		
7.		Counters Mod 2, 5, 10 (2 x 5, 5 x 2)		
1.	Skill Experiments	Estimation of errors from actual experimental data	Lectures per Week 8	2 Hours for each Practical
2.		Optical Leveling of Spectrometer		
3.		Schuster's method		
4.		Laser beam profile		
5.		Optical Leveling of Spectrometer		
6.		Use of DMM to test diode, transistor		
7.		Estimation of errors from actual experimental data		


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Shikshak Sanchalit Shikshan Sanstha's
Dr. Shantikal Dhanji Devsey Arts College
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DSDD Arts College and Commerce & Science College, Wada, Dist. Palghar

Teaching Plan Year (2024–2025) Semester: VI Department: Physics

Duration of Teaching: Dec 2024 to April 2025 Class: T.Y.B.Sc

Name of Faculty : Kailas P.Joshi Subject: Physics Practicals Course: USPHP07-08

Sr. No.	GROUPS	Topics	Lectures per Week	Duration
1.	A/B	Study of JFET characteristics	Lectures per Week 8	2 Hours for each Practical
2.		JFET as a common source amplifier		
3.		JFET as switch (series and shunt)		
4.		Self-inductance by Anderson's bridge		
5.		Application of Op-Amp as a window comparator		
6.		Application of Op-Amp as a Log amplifier		
7.		Shift register		
1.	Skill Experiments	Open CRO, Power Supply, and Signal Generator: block diagrams	Lectures per Week 8	2 Hours for each Practical
2.		Data sheets: Diodes, Transistor, Op-amp & Optoelectronic devices		
3.		Digital storage oscilloscope (DSO)		
4.		Determination of Op-Amp parameters (offset voltage, slew rate,		
5.		Transformer (theory, construction and working), types of transformers and energy losses associated with them.		


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Teaching Plan Year (2024–2025) Semester: I

Department: Physics **Duration of Teaching:** June 2024 to December 2025

Class: F.Y.B.Sc. **Subject:** Physics Practicals

Course: USPHP1

Hours = 30

Sr. No.	Topics	Number of Hours Planned	Lectures per Week (3)	Duration
Unit I	GROUP-A	8		
1	Torsional Oscillation	2	2	August to Second Week of September
2	Bifilar Pendulum	2	2	
3	Flywheel Experiment	2	2	
4	Young's Modulus by Vibration Method	2	2	
	GROUP-B	8		
1	AC Mains Frequency using Sonometer	2	2	Second Week of September to October
2	Thermistor Characteristics	2	2	
3	Capacitance in AC Circuit	2	2	
4	Inductance in AC Circuit	2	2	
	GROUP-C (Skill Experiments)	14		
1	Vernier Callipers, Screw Gauge & Travelling Microscope	3	3	Last Week of July to Second Week of August
2	Graph Plotting	3	3	
3	Spectrometer – Schuster's Method	3	3	
4	Resistance & Capacitance using Colour Code	3	3	
5	Digital Multimeter	2	3	


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DSDD Arts College and Commerce & Science College, Wada, Dist. Palghar

Teaching Plan

Name of Teacher: Dr. Kailas Prabhakar Joshi

Department: Physics

Academic Year: 2024–2025

Class and Semester: F.Y.B.Sc. Semester II

Subject & Paper: Physics Practicals

Course Code: USPHP2

Duration of Teaching: December 2024 to March 2025

Hours = 30

Sr. No.	Topics	Number of Hours Planned	Lectures per Week (3)	Duration
	Unit I	30		
	GROUP-A	8		
1	Study of LASER Beam Divergence	3	2	Second Week of December to January
2	Spectrometer: To determine angle of Prism	3	2	
3	Spectrometer: To determine refractive index of prism material	3	2	
4	Combination of Lenses: To determine equivalent focal length of a lens system	3	2	
	GROUP-B	8		
1	Study of Logic Gates & Verification of De Morgan's Theorems	3	2	Month of February
2	To study EX-OR Gate and verify its truth table	2	2	
3	To study Half Adder and Full Adder and verify their truth tables	4	2	
4	To study load regulation of a Bridge Rectifier	3	2	
	GROUP-C: Skill Experiments	14		
1	Radius of Ball Bearings (Single Pan Balance)	1	3	Second Week of February to First Week of March
2	Use of Oscilloscope: Waveforms at output of Half-wave and Bridge Rectifiers with and without Capacitor Filter; Ripple	2	3	

3	Testing of Components (Resistor, Diode, Transistor, Capacitor)	1	3	
4	Study of I-V Characteristics of Solar Cell	2	3	


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DSDD Arts College and Commerce & Science College Wada, Dist. Palghar

i. Teaching Plan Year (2024-2025) Semester: IV

Department of Physics

ii. Semester Duration: Nov 2024 to May 2025

iii. Duration of Teaching: Nov 2024 to March 2025

Class: S.Y.B.Sc

Subject: Electrodynamics

Course: USPH 402

Sr. no.	Topics	Number of Hrs/week planned	Lectures per week 3
1	Unit I	15	
1	Electrodynamics and Vector calculus: Line, surface, volume integrals, Fundamental theorems of Gradient, Curvilinear co-ordinates, Divergence and Curl	3	13 Nov To 5 Dec 2024
	volume integrals, Fundamental theorems of Gradient,	2	
	Curvilinear co-ordinates	3	
	Divergence and Curl	2	
	Divergence and Curl and applications	2	
	Numerical	3	
	Unit-II	15	
2	Electromagnetism Coulomb's law, Comments on potential, Poisson's equation and Laplace's equation.	4	6 Dec to 24 to end of Dec 2024
	Solution and properties of 1D Laplace equation.	3	
	Properties of 2D and 3D Laplace equation First & Second Uniqueness theorem	8	
3	Unit-III	15	
	Magnetostatics : Magnetization, The Divergence and Curl of B, Ampere's law in magnetized materials, Comparison of Magnetostatics and Electrostatics , Bound currents and their physical interpretation, Magnetic susceptibility and permeability.	6	1 Feb to first week of 5 March 2025


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Shikshak Sanchalit Shikshan Sanstha's
DSDD Arts College and Commerce and Science College,
Wada, Dist Palghar-421303
Teaching Plan

Name of Teacher: Dr. Kailas Prabhakar Joshi

Department: Physics

Academic Year: 2024-25

Class and Semester: S.Y.B.Sc Sem-III

Subject & Paper: Mathematical Methods & Applied Physics – I

Course Code: USPH303

Sr. No.	Month	Unit/ Module	Topic to be covered	Lecture/ Practical/ tutorial	3 lectures/ Week
1	Jun To July	Unit I	1. Differential Equations: Introduction, Ordinary differential equations: first order homogeneous and non- homogeneous differential equations with variable coefficients, Variable separable method, exact differentials equation General first order Linear eDifferential equation and Second-order homogenous differential equations with constant coefficients. Problems depicting physical situations like LC and RL circuits.	15	5 weeks
2	Last week of July And first week of Aug	Unit 2	Second-order non homogeneous equations with constant coefficients, partial differential equations, some important partial differential equations in physics, method of separation of variables. Applications of Partial differential Equation: Modeling of vibrating stretched string and two dimensional heat flow equation, Laplace's equation in two dimensions, Solution of wave equation and Helmholtz's equation	15	5 weeks
3	Aug to September		1. Acoustics of Buildings: Reverberation, Explanation and Importance of Sabine's formula, Absorption Coefficient, Acoustics of Buildings, Factors Affecting Acoustics of Buildings, Sound Distribution in an Auditorium.	15	5 weeks
			2. Radio communication: i) Basics of Communication: Block diagram of communication system, types of communication system: simplex, duplex, analog and digital communication, base band and broad band communication. Noise concept and types, signal		

			to noise ratio, noise figure, noise temperature.		
			ii) Amplitude Modulation: Need of modulation, concept of modulation, AM waveform, mathematical expression of AM, AM Receiver: TRF and super heterodyne receiver		
			iii) Frequency Modulation: Definition, mathematical representation, frequency spectrum. iv) Concept of ASK, PSK, FSK, PAM, PWM, PPM, PCM.		


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Dr.S.D.Devsey Arts College and Commerce & Science College Wada, Dist: Palghar
Teaching Plan (2024-25) Semester: III Department of Physics

Duration: Jun 2024 to Nov 2025

Class: S.Y.B.Sc Subject: Physics paper -III Course:USPH-303

Sr.no.	Topics	Number of Hrs planned	Lectures / week-4	Learning Inputs
1	1. Acoustics of Buildings: Reverberation, Explanation of Sabine's formula, & Importance of Sabine's Formula, Absorption Coefficient, Acoustics of Buildings, Factors Affecting Acoustics of Buildings, Sound Distribution in an Auditorium.	15	4	Fundamental of Acoustics, factors of acoustics discussed with different examples.
2	2. Laser: Introduction, transition between Atomic energy states, Principle of Laser, Properties of Laser: Coherence Properties of LASER, Spatial Coherence Length, Directionality, Intensity, Helium-Neon Laser, Application of Laser, Holography	15	4	Concept of light its importance, Application and its engineering and medical applications were discussed
3	Unit II: Crystal Physics 1) Lattice points and space lattice, The basis and crystal structure, Unit Cells and lattice parameters, Primitive Cells, Crystal Systems, Crystal Symmetry, Bravais space lattices 2) Metallic crystal structures, relation between the density of crystal material and lattice constant in a cubic lattice, Directions, Planes, Miller Indices, Important planes in simple cubic structure, separation between lattice planes in a cubic crystal.	15	4	Types of crystals, solid state bonds, miller indices, structures were highlighted
	Unit III: Properties of Material 15 Lectures 1) Electrical properties: Review of energy band diagram for materials –		4	Band gap, Brewster's law, reflection, magnetic materials, susceptibility's, periodic elements

conductors, semiconductors and insulators, Electrical conductivity in metals, semiconductors and insulators (dielectrics), effect of temperature on conductivity. 2) Optical properties: Reflection, refraction, absorption and transmission of electromagnetic radiation in solids. 3) Magnetic properties: Origin of magnetism in solids (basic idea), Types of magnetic order (Para magnetism, Diamagnetism, antiferromagnetic, ferromagnetism, ferrimagnetism), magnetic hysteresis. 4) Applications: Dielectric materials: Piezoelectric, ferroelectric	were discussed ,properties of materials, various types of characterizations like X ray,TGA,DSC,DTA,BAND GAP,V.B.THEORY
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Shikshak Sanchalit Shikshan Sanstha's

DSDD Arts College and Commerce and Science College,

Wada, Dist Palghar-421303

Teaching Plan

Name of Teacher: Dr. Kailas Prabhakar Joshi

Department: Physics

Academic Year: 2024-25

Class and Semester: S.Y.B.Sc- Sem-III

Subject & Paper: Physics Practical's -

Course Code: USPHP-4 – **Duration of Teaching:** Jun 2024 to Dec 2024

Hours =30

Sr.no.	Topics	Number of hours planned	Lectures per week 2/2	Duration
1	Unit I	30		
	GROUP-A			
1.	Determination of Young's Modulus.	2	2	Last week of July to Second week of August
2.	Determination of acceleration due to gravity g using Kater's pendulum	2	2	
3.	Determination of Young's Modulus (Y) using Flat spiral spring	2	2	
4.	Determination of Modulus of Rigidity (η) using Flat spiral spring	2	2	
5.	Log Decrement using Simple pendulum	2	2	
6.	Determination of R.I. of liquid by laser	2	2	
	GROUP-B			
1.	LCR series Resonance	2	2	August to Second Week of September
2.	LCR parallel resonance	2	2	
3.	Thevenin's Theorem: To verify the theorems for DC circuits	2	2	
4.	Norton's Theorem: To verify the theorems for DC circuits	2	2	
5.	Passive Low Pass Filter	2	2	
6.	Passive High Pass Filter	2	2	
	GROUP-C: Skill Experiment			
1.	To find least count of different	1	2	

	types of optical instruments			Second week of September to October
2.	To calculate and measure values of passive components	1	2	
3.	To find percentage tolerance of different types of passive components	1	2	
4.	To demonstrate an experiment and explain principles of Physics	1	2	
5.	To prepare chart for and explain the devices /components used for experiments.	1	2	
6.	Execute a short experiment which will showcase either innovation	1	2	


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DSDD Arts College and Commerce and Science College,

Wada, Dist Palghar-421303

Teaching Plan

Name of Teacher: Dr. Kailas Prabhakar Joshi

Department: Physics

Academic Year: 2024-25

Class and Semester: S.Y.B.Sc Sem-III

Subject & Paper: Physics Practical's

Course Code:USPHP4- Duration of Teaching: Dec 2024 to March 2025- Hours = 30

Sr.no.	Topics	Number of hours planned	Lectures per week 3	Duration
	Unit I	30		
	GROUP A			
1	Determination of Young's Modulus	2	2	Last week of July to Second week of August
2	Determination of acceleration due to gravity g using Kater's pendulum	2	2	
3	Determination of Young's Modulus (Y) using Flat spiral spring	2	2	
4	Determination of Modulus of Rigidity (η) using Flat spiral spring	2	2	
5	Log Decrement using Simple pendulum	2	2	
6	Determination of R.I. of liquid by laser	2	2	
	GROUP-B			
1	LCR series Resonance	2	2	August to Second Week of September
2	LCR parallel resonance	2	2	
3	Passive Low Pass Filter	2	2	
4	Passive High Pass Filter	2	2	
5	Passive Band Pass Filter	2	2	
6	LCR series Resonance	2	2	
	GROUP-C			
1	To find least count of different types of optical instruments	1	2	

2	To calculate and measure values of passive components	1	2	Second week of September to October
3	To find percentage tolerance of different types of passive components	1	2	
4	To demonstrate an experiment and explain principles of Physics	1	2	
5	To prepare chart for and explain the devices /components used for experiments.	1	2	
6	Execute a short experiment which will showcase either innovation	1	2	


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DSDD Arts College and Commerce & Science College Wada, Dist. Palghar

Teaching Plan Year (2024-2025) Semester: IV

Department of Physics

Duration of Teaching: Dec 2024 to March 2025

Class: S.Y.B.Sc

Subject: Physics Practical's

Course: MAJOR USPHP4

Hours =30

Sr.no.	Topics	Number of hours planned	Lectures per week 3	Duration
	Unit I	30		
	GROUP-A			
1	Brewster's law: determination of μ	2	2	Second week of December to January
2	Determination of Absolute capacitance using BG	2	2	
3	Determination of angle of diffraction using grating (1st order only)	2	2	
4	Optical lever: determination of μ	2	2	
5	I-V Characteristics of Solar cell with different intensity of light	2	2	
6	Fresnel's bi-prism: determination of λ	2	2	
	GROUP-B			
1	J-K flip Flop: Design and verify truth table of J-K flip flop (Using IC 7476 or IC 7473)	2	2	Month of February
2	OPAMP: Inverting amplifier with different gains (BB)	2	2	
3	OPAMP Non-inverting amplifier with different gains & Voltage Follower (BB)	2	2	
4	OPAMP as Integrator (BB)	2	2	
5	CE Amplifier: Determination of Bandwidth	2	2	
6	OPAMP as Differentiator (BB)	2	2	
	GROUP-C: Skill Experiment/Optional			
1	To find least count of different types of optical instruments	1	2	First week of March
2	To calculate and measure values of passive components	1	2	
3	To find percentage tolerance of different types of passive components	1	2	
4	To demonstrate an experiment and explain principles of Physics	1	2	

5	To prepare chart for and explain the devices /components used for experiments.	1	2	
6	Execute a short experiment which will showcase either innovation and / or different methods to the satisfaction of teacher in-charge of practical.	1	2	


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DSDD Arts College and Commerce & Science College Wada, Dist. Palghar

i. Teaching Plan Year (2024-2025) Semester: VI

Department of Physics

ii. Semester Duration: Nov 2024 to May 2025

iii. Duration of Teaching: Nov 2024 to March 2025

Class: T.Y.B.Sc

Subject: Electronics

Course: USPH602

Sr. no.	Topics	Number of hours planned	Lectures per week 4	Learning Inputs
1	Unit I	15		
	Field effect transistors: JFET: Basic ideas, Drain curve, The trans conductance Curve, Biasing in the ohmic region and the active region	3	13 Nov 2024 to 5 Dec 2024	Fundamentals of Electronics, conduction of electric current in P-N junction diode stages
	Trans conductance, JFET common source amplifier, JFET analogue switch,	2		Types of transistors its working, Biasing.
	Multiplexer, voltage-controlled resistor, current sourcing.	3		Rectifier its Types
	MOSFET: Depletion and enhancement mode, MOSFET operation and characteristics, digital switching.	2		
	SCR- construction, static characteristics, Analysis of the operation of SCR,	2		
	Gate triggering characteristics, Variable half wave rectifier and Variable full wave rectifier, Current ratings of SCR.	1		
	UJT: construction, Operation characteristics and application as a relaxation oscillator.	2		
	Unit-II	15		
	Differential Amplifier using transistor: The Differential Amplifier, DC and AC analysis of a differential amplifier,	4	6 Dec to 24 Dec 2024	Operational amplifier 741 comparison with Transistor.
	Input characteristics -effect of input bias, offset current and input offset voltage on output, common mode gain, CMRR.	3		
	Op Amp Applications: Log amplifier, Instrumentation amplifiers, Voltage controlled current sources (grounded load), First order Active filters, Astable using OP AMP, Comparators with Hysteresis, Window Comparator.	8		
		15		
	Unit-III		First week of Jan to end of Jan 2025	
	Transistor Multivibrators: Astable, Monostable and bistable Multivibrators, Schmitt trigger.	6		As per content, pulse modulation, power supply,

	555 Timer: Review Block diagram, Monostable and Astable operation Voltage Controlled Oscillators, Pulse Width modulator, Pulse position Modulator, Triggered linear ramp generator.	4		controller, oscillator
	Regulated DC power supply: characteristics, series voltage regulator, short circuit protection (Current limit and fold back) Monolithic linear IC voltage Regulators. (LM 78XX, LM 79XX, LM317, LM337).	5		
	Unit-IV	15	1 Feb to first week of 5 March 2025	Types of Gates, and AND,OR,NOT,N AND,EXOR,its truth Tables etc.
	Logic families: Standard TTL NOR, Open collector gates, Three states TTL devices, MOS inverters, CMOS NAND and NOR gates, CMOS characteristics.	8		
	Digital Communication Techniques: Digital Transmission of Data, Benefits of Digital Communication, Disadvantage of Digital Communication, Parallel and serial transmission, pulse Modulation, Comparing pulse - modulation Methods (PAM, PWM,PPM), pulse-Code Modulation.	7		


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DSDD Arts College and Commerce & Science College Wada, Dist: Palghar

Teaching Plan 2024-2025 Semester: VI

Department of Physics

Semester Duration: Nov 2024 to May 2025

Duration of Teaching: Nov 2024 to April 2025

Class: T.Y.B.Sc Subject: Classical Mechanics Course: USPH601

Sr.no.	Topics	Number of hours planned	Lectures per week-4	Learning inputs
1	Central force	15		
	1.Motion under a central force, central force inversely proportional to the square distance	2	13 Nov 2024 to 5 Dec 2024	Newton's laws, Gravitation Kepler's-laws, moment-of-Inertia, Rotational motion
	Elliptic Orbits, The Kepler problem	2		
	2.movin origin of coordinates, Numerical	3		
	Rotating coordinate systems, Numerical	2		
	Law of motion on the rotating earth	2		
	The Foucault problems, armours theorems	2		
2	Unit II: Lagrange s equation	15		
	1.D''Alambertprinciple,constraints,Example s of holonomic constraints, examples of non holonomic constraints, degrees of freedom and generalized coordinates,	4	6 Dec to 24 Dec 2024	Constraints, inertial frame-of-Reference, non-inertial frame of reference, general coordinate system
	Virtual displacement, virtual work, D'Alembert's principle, illustrative problems.	3		
	2. Lagrange' equation(using D'Alembert's principle), properties of Lagrange's equations,	4		
	Illustrative problem, canonical momentum, cyclic or ignorable coordinates	2		
	Number of numerical	2		
3	Unit III : Fluid Motion and Rigid body rotation	15		
	1. Kinematics of moving fluids, Equation of motion for an ideal fluid, conservation laws for fluid motion, steady flow.	4	First week of Jan to end of end of Jan 2025	Viscosity, Bernoulli s theorem, Degree of freedom, rotation of rigid bodies, spinning top.
	2. Rigid dynamics: introduction, degrees of freedom, rotation about an axis: orthogonal matrix,	4		
	Euler's theorem, Eulerian angles, inertia tensor, angular momentum of rigid body, symmetric top (without notation)	4		
	Euler's equation of motion of rigid body, free motion of rigid body, motion of	2		
	Symmetric top (without notation)	1		
4	Unit IV : Non Linear Mechanics	15	1 Feb to first week	Undamped and damped harmonic and forced
	1. Nonlinear mechanics: Qualitative	5		

	approach to chaos,		of 5 March 2025	oscillations
	The anharmonic oscillator, Numerical solution of Duffing's equation.	5		
	2. Transition to chaos: Bifurcations and strange attractors, Aspects of chaotic behaviour (logistic map).	5		Third stage of matter


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DSDD Arts College and Commerce & Science College Wada, Dist.: Palghar
Teaching Plan 2024-2025

Department of Physics

Class: T.Y.B.Sc

Subject: Solid State Physics

Course: USPH502

Duration of Semester: Jun 2024 to Nov 2025

Teaching Duration: Jun 2024 to Oct 2024

Sr.no.	Topics	Number of hours planned	Lectures per week 4	Inputs and Learning outcomes
1	Unit 1: Crystal Physics General introduction of reflection, refraction, Dispersion, interference, polarisation, Types of prisms, overall revision of theories. Lattice point and space lattice, The basis and crystal structure, Unit cells and lattice parameters, primitive cells Crystal systems, crystal symmetry, Bravais space lattices, metallic crystal structures Relation between density of crystal material and lattice constant in a cubic lattice Directions, planes miller indices, important planes in scc structure Separation between lattice planes in a cubic structure, reciprocal lattice X-ray diffraction, classical free electron theory of metals, collision time, relaxation time and mean free path	15	Second week of 12 Jun 2024 to second week of July 2024	General fundamentals of light are discussed with student. Students are able to understand the concepts which were strike.
2	Unit II: Electrical properties of metal Quantum theory of free electrons, Fermi Dirac statistics and electronic distribution in solids Density of energy states and Fermi energy, Fermi Distribution Function, Heat capacity of electron gas Mean energy of electron gas at 0 kelvin, electrical conductivity from Quantum mechanical consideration	15	July 2024 to second week of Aug 2024	Inter relation between conduction convection, effect Transitions in temperatures Heat capacities were discussed. Students recalled from concept of resistance, density. Ionic gas its role in conductivity understood. Students are able to understand Application of electrical conductivity, specific -resistance, conductance their applications in units
2	Unit II: Band theory of solids, The Kronig penny model, Brillouin zones, Number of Wave function in band, Motion of electron in one dimensional periodic potential,			Energy, wavefunctions, conduction and Valence band theories were discussed, good outcomes obtained with concept of wave function Schrödinger equations and Einstein energy relations.
			Last week	

	Distinction between metals, insulator and intrinsic semiconductor		of Aug 2024 to	
3	Unit III: Conduction in semiconductors Electrons in holes in intrinsic semiconductor, conductivity, carrier concentrations Fermi levels in intrinsic semiconductors, Diffusion, carrier life time The continuity equation, Hall effect Semiconductor diode characteristics: Qualitative theory of p-n junction, P-n junction as a diode, Band structure of open circuit p-n junction	15	September 2024	Basics of conductor's insulator and semiconductors were revised and formation of PN junction Diode rectifier its application are discussed Verified with Experimental outcomes of V-I characteristic
4	Unit IV: Diode, Magnetism and super conductivity	15		
	1.The current component in a p-n junction diode, Quantitative theory of p-n junction diode current The V-I Characteristics, The temperature dependence of p-n characteristic, Diode resistance 2. Magnetic properties of matter; The diamagnetism and Para magnetism, The origin of permanent magnetic dipole Diamagnetism and Lamoure precession, The static paramagnetic susceptibility. Superconductivity: Mechanism of superconductors, Effect of magnetic field Critical currents, The Meissner effect, The penetration Depth Type I and II superconductors		Last week of Sep 2024	Polarisation of magnetic lines, Atomic Theory of, coulombs law, orientation of magnetic lines, flux its Alignments are discussed. Penetrations of magnetic lines under the action of magnetic field are discussed.


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DSDD Arts College and Commerce & Science College Wada, Dist.: Palghar
Teaching Plan 2024-2025 Semester V Department of Physics
Class: T.Y.B.Sc Subject: ELECTRODYNAMICS Course: USPH504
Duration of Semester: Jun 2024 to Nov 2024
Teaching Duration: Jun 2024 to Oct 2024

Sr.no.	Topics	Number of hours planned	Lectures per week 4	Inputs and Learning outcomes
1	Unit 1: Electrostatics: Introduction, revision from coulombs law, fundamentals, revision of formulae, general idea about syllabus and topics in syllabus	2	second week Jun2024 to July 2024	Fundamentals from coulombs law, concept of Flux, Revision of Divergence, curl.
	Field lines, Flux and Gauss law, The divergence of E	2		
	Application of gauss law	2		Properties of lines of force and tubes of force
	Curl of E, Introduction to potential, comments on potential	3		
	Poisson's equation and Laplace Equation	2		
	The potential of a localized charge distribution, Review of conductors	2		
	First Uniqueness theorem, the classic image problem-infinite conducting plane	2		
2	Unit II: polarisation and Magneto statics	15	Second of July2024 to 14 Aug 2024	Fundamentals of magnetic materials, Bohr's theory, its postulates
	Dielectrics, induced Dipoles, Alignment of polar molecules, polarisation	3		
	Bound charges, and their physical interpretation	2		
	Gauss law in presence of Dielectrics, A Deceptive parallel, susceptibility, permittivity, Dielectric constant, Energy in Dielectric systems	4		
	Straight line currents of B and curl of Application of Ampere law in case of long straight wire and long solenoid,	3		
	Comparison of Magneto statics and electrostatics	3		
3	Unit III: Magnetism and Varying Field	15	Third week of Aug 2024 to first week of Sep 2024	Distinguish between Para magnetism, magnetic susceptibility,
	1. Diamagnets Para magnets, Ferro-magnets, Magnetisation	2		
	Bound currents and their physical interpretation	2		

	Amperes law in magnetised materials, A deceptive parallel, magnetic susceptibility and permeability	3		charge distribution, electrodynamic s before Maxwell.
	2. Energy in Magnetic fields, Electrodynamics Before Maxwell, Maxwell correction to Amperes law,	3		
	Maxwell's Equations, Magnetic charge, Maxwell's Equation in matter, Boundary conditions	5		
4	Unit IV :Electromagnetic waves	15		Types of waves, momentum of waves, concept of transmission
	1.The continuity equation,	2	Second week of sept 2024 to first week of Oct 2024	
	Poynting theorem Newton's third law in Electrodynamics.	3		
	2.The wave equation For E and B	2		
	Monochromatic plane waves, Energy and momentum in electromagnetic waves	3		
	Propagation in linear media	2		
	Reflection and transmission of EM waves At normal incidence	3		


HEAD
DEPARTMENT OF PHYSICS




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