COLLEGE: MAHARAJA BIJLI PASI GOVERNMENT. P.G. COLLEGE, ASHIANA, LUCKNOW

ACADEMIC CALENDAR : SESSION- (2024-2025)

NAME OF TEACHER: DR. NEETU SINGH/ DR. SEEMA SHUKLA

DEPARTMENT: DEPARTMENT OF **PHYSICS**

CLASS: BSC (NEP)-I YEAR (**I SEMESTER)** Applicable from July 2024 (CREDITS:04)

S.NO.	CLASS (YEAR, SEMESTER)	PAPER	UNIT	TOPIC NAME	MONTHLY / WEEKLY PLAN	TEACHING PEDAGOGY	LEARNING OUTCOMES	ANY OTHER DETAIL
01	02	03	04	05	06	07	08	09
1	BSC (NEP) – I YEAR, I SEMESTER CREDITS-4 T:04	P-1 (MAJOR & MINOR) PHY-101- MECHANICS AND WAVE MOTION	**Course Outcomes:** 1. The students would clearly understand the conflict between Newtonian mechanics and Special Relativity and thus would know how the progress of the revolutionary scientific ideas is made through logical evidences and observations. 2. They would be able to understand the differences between inertial and noninertial frames and see how pseudo-forces arise in non-inertial frames. 3. They would have a clear understanding of the dynamics of conservative and non-conservative forces in real life such as in gravitational fields or mechanical systems having friction etc. 4. They would feel the thrill to know that the same set of laws that work for planetary and galactic motions also work in our daily life. Further, they would be able to do mathematical calculations with application of these laws to various objects and artificial satellites. 5. They would be able to understand and calculate various macroscopic elastic properties as the response of the widely used materials through the application of simple classical laws. 6. The students would be able to understand and apply the properties of oscillations (natural, damped and forced), and waves and appreciate their omnipresence in various phenomena around us.				
			UNIT-I	Galilean transformations of space and time and their relation to Newton's laws of motion. Strong and weak form of the Newton's third law of motion. Difference between Inertial and non-inertial frames. Action-at-a-distance and	MIN. 14 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				Mach's principle. Conclusions of Michelson-Morley experiment. Chief arguments against Galilean relativity. Postulates of Special Relativity. Simple ideas of length contraction and time dilation. Energy and momentum in relativistic mechanics and modification of Newton's laws of motion. Concepts of gradient, divergence and curl of physical quantities. Simple application of Gauss's divergence and Stoke's curl theorems. Conservative and non-conservative forces, Conservation laws for energy and linear momentum and their relation to symmetries. Pseudo-forces in rotating frame. Coriolis force.				
			UNIT-II	Elastic and inelastic collisions and one and two dimensions. Centre of mass frame as the zero-momentum frame. Angular momentum, Torque, Conservation of angular momentum and its relation to isotropy of space. Rotational energy and inertia tensor. Moment of inertia for simple bodies (ring, disk, rod, solid and hollow sphere, solid and hollow cylinder, rectangular lamina). The combined translational and rotational motion of a rigid body on horizontal and	MIN 14 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				inclined planes. 4 Elasticity, Relations between elastic constants. Twisting of hollow and solid cylinders. Torsional rigidity. Bending moment and Flexural rigidity in bending of beam. Geometrical moment of inertia. Depression for cantilever and supported beams.				
			UNIT-III	Reduction of a two-body central force problem in to one-body problem. Reduced mass for a pair of bodies. Relative and centre of mass motion with reduced mass. Motion of Planets, satellites and our solar system. Kepler's laws of planetary motion and their implications. Role of the inverse-square form of Newton's law of gravitation in determination of orbit. Motion of geo-synchronous and geo-stationary satellites. Elementary concepts of Global Positioning System (GPS) based on relativistic mechanics. Structure and motion of our Galaxy due to self gravity.	MIN 12 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-IV	Differential equation of simple harmonic motion and its solution. Damped and Forced harmonic oscillations, Sharpness of Resonance. Quality factor. Plane progressive waves in fluid media and pressure and energy distribution along the waves.	MIN 12 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				Transport of energy along strings. Reflection of waves from free and fixed boundaries and phase change at the boundaries. Principle of superposition of waves. Standing waves and resonance. Phase and group velocity.				
			References: **Text Books:** 1. Daniel Kleppner and Robert Kolenkow, "An Introduction to Mechanics", (Mc Graw Hill), 2017. 2e. 2. Charles Kittel, Walter D. Knight, Malvin A. Ruderman, Carl A. Helmholz, Burton J. Moyer, "Mechanics (In SI Units): Berkeley Physics Course Vol 1", McGraw Hill, 2017, 2e. 3. Richard P. Feynman, Robert B. Leighton, Matthew Sands, "The Feynman Lectures on Physics - Vol. 1", Pearson Education Limited, 2012. 4. Halliday, Resnick and Walker, "Principles of Physics", (Wiley) 2018, 10e. 5. Frank S. Crawford, Jr, "Waves": Berkeley Physics Course Vol 3", McGraw Hill, 2017. 6. D.S. Mathur, "Mechanics", S. Chand Publishing, 1981, 3e. 7. R.K. Shukla and Anchal Srivastava, "Mechanics" Published by: New Age International (P) Limited Publishers. **Web References:** 1. MIT Open Learning - Massachusetts Institute of Technology, https://openlearning.mit.edu/ 2. National Programme on Technology Enhanced Learning (NPTEL), https://www.youtube.com/user/nptelhrd 3. Uttar Pradesh Higher Education Digital Library, http://heecontent.upsdc.gov.in/SearchContent.aspx SwayamPrabha - DTH Channel, https://www.swayamprabha.gov.in/index.php/program/current_he/8				**FINAL EVALUATION THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL**
2	**BSC (NEP) – I YEAR, I SEMESTER**	**P-2 (MAJOR)**	**Course Outcomes:** 1. The student will get an introduction to the discipline of optics and its role in daily life. 2. The optics course will give the student a basic knowledge of interference, diffraction and polarization. 3. The student will be able to analyze and calculate interference between light waves and application of the theory to various interferometers along with their practical applications. 4. The student would know the conditions for near and far-field diffraction and be able to calculate the far-field diffraction from gratings and simple aperture functions.					

	CREDITS-4 **T:04**	**PHY-102-OPTICS**	5. The student would understand how the polarization of light changes at reflection and transmission at interfaces.					
			UNIT-1	Electromagnetic nature of light; Superposition of light waves; Coherence, Spatial and temporal coherence; Interference, Division of Wavefront – Young's double slit experiment, Fresnel's Biprism, Lloyd's Mirror; Division of amplitude – Thin films (parallel and wedge shaped films), Newton's rings. Interferometers: Michelson's Interferometer, (i) Idea about form of fringes, (ii) Determination of wavelength, (iii) wavelength difference, (iv) refractive index and visibility of fringes; Fabry-Perot interferometer; Etalon	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-II	Diffraction; Fresnel Diffraction - Half period zones, Zone plate, diffraction at a straight edge and narrow wire; Fraunhoffer Diffraction – Diffraction at circular aperture, diffraction at single and double slits with derivation of equation for intensity and visibility; Diffraction grating, principal maxima and missing orders.	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-III	Resolving power; Rayleigh's criterion of resolution, Resolving power of grating and telescope. Polarization: polarization by reflection, polarizing angle, Brewster's law, Law of Malus;	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				Polarization by dichroic crystals, birefringence, anisotropic crystals; Nicol prism, Retardation plates, Babinet compensator; Analysis of polarized light.				
			UNIT-IV	Optical activity and Fresnel's explanation; Specific rotation, Half shade and Biquartz polarimeters. Jones matrix, matrix representation of plane polarized waves, matrices for polarizers, retardation plates and rotators.	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			References: **Text Books:** 1. F.A. Jenkins and H.E. White, Fundamentals of Optics, Tata McGraw Hill. 2. Brij Lal and N. Subrahmaniyam, Optics, S. Chand. 3. E.Hecht, Optics, Pearson. 4. A.K.Ghatak, Optics, Tata Mc Graw Hill. **Web References:** 1. MIT Open Learning - Massachusetts Institute of Technology, https://openlearning.mit.edu/ 2. National Programme on Technology Enhanced Learning (NPTEL), https://www.youtube.com/user/nptelhrd 3. Uttar Pradesh Higher Education Digital Library, http://heecontent.upsdc.gov.in/SearchContent.aspx SwayamPrabha - DTH Channel, https://www.swayamprabha.gov.in/index.php/program/current_he/8				**FINAL EVALUATION THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL**

COLLEGE: MAHARAJA BIJLI PASI GOVERNMENT. P.G. COLLEGE, ASHIANA, LUCKNOW

ACADEMIC CALENDAR : SESSION- (2024-2025)

NAME OF TEACHER: DR. NEETU SINGH/ DR. SEEMA SHUKLA

DEPARTMENT: DEPARTMENT OF **PHYSICS**

CLASS: BSC (NEP)-I YEAR (**II SEMESTER)** Applicable from January 2025 (CREDITS:04)

S.NO.	CLASS (YEAR, SEMESTER)	PAPER	UNIT	TOPIC NAME	MONTHLY/WEEKLY PLAN	TEACHING PEDAGOGY	LEARNING OUTCOMES	ANY OTHER DETAIL
01	02	03	04	05	06	07	08	09
1	**BSC (NEP) – I YEAR, I I SEMESTER CREDITS-4 T:04**	**P-3 (MAJOR & MINOR) PHY-201- ELECTRICITY AND MAGNETISM**	**Course Outcomes:** After successful completion of this course, students will: 1. Understand the basic mathematical concepts related to Electromagnetic fields, and use the understanding of calculus along with basic principles to solve problems encountered in science. 2. Comprehend and apply the understanding of fundamental laws and concepts in electricity and magnetism, primarily with regard to Maxwell's laws, to explain natural physical processes and related technological advancements. 3. Learn about the origin and basic properties of static as well as dynamic Electric and Magnetic fields, and the kinds of physical phenomena they generate - Electromagnetic waves and their properties. 4. Account for the importance of electricity and magnetism in society, especially with regard to technological applications. 5. Visualize and design experiments based on the basic concepts of electricity and magnetism, and obtain information in order to explore physical principles.					
			UNIT-I	Electrostatics: Electric charge & types of electric charge densities, Coulomb's Law. General expression for Electric field E. Electric flux, Gauss's law (applications included). Divergence & Curl of Electrostatic field. Line integral of Electric field, Electric potential (V), Electric field as negative of gradient of electric potential (E =	MIN 12 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				- ∇V), conservative nature of Electrostatic field. Electric potential and Electric field due to a Dipole, and Quadrupole. Force and torque on a Dipole in uniform as well as non-uniform Electric field. Electrostatic Energy of a configuration of charges, and uniformly charged sphere. Electric fields in Matter: Polarization, Polarization vector (P), Bound charges, Electric displacement vector (D), Electric Susceptibility and Dielectric constant. Relation between E, P and D. Lorentz local field, Clausius-Mossotti equation, Debye equation.				
			UNIT-II	Magnetostatics: Magnetic effect of currents, Magnetic field (B), Biot-Savart's Law (applications included). Ampere's Circuital law and its applications. Divergence and Curl of magnetic field. Scalar and Vector magnetic potential. Forces on a moving charge. Magnetic Force on a current carrying wire and its loop. Torque on a current loop in a uniform Magnetic Field. Current loop as a magnetic dipole and its dipole moment. Magnetic Properties of Matter: Magnetization vector (M), Magnetic Intensity(H), Magnetic	MIN 12 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				Susceptibility and permeability. Relation between B, M and H. Types of Magnetic materials. B-H curve and Hysteresis.				
			UNIT-III	Time Varying Electromagnetic Fields: Faraday's laws of Electromagnetic Induction and Lenz's law. Induced Electric field, non- conservative nature of Induced electric field. Self and Mutual Induction (applications included). Selfinductance of a solenoid and toroid, Mutual inductance of two Coils. Energy stored in Magnetic Field. Skin effect. Motion of Electron in a changing Magnetic field – Betatron equation. Theory and working of the moving coil Ballistic galvanometer (applications included).	MIN 12 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-IV	Electromagnetic Waves: Equation of continuity of current, Displacement current, derivation of Maxwell's equations and physical significance of Maxwell Correction term. Electromagnetic waves in vacuum and isotropic Dielectric medium, Transverse nature of Electromagnetic waves, Energy density in Electromagnetic	MIN 14 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				wave - Poynting vector.				
			References: 1. E.M. Purcell, "Electricity and Magnetism (In SI Units): Berkeley Physics Course Vol 2", McGraw Hill, (2017), 2e. 2. Richard P. Feynman, Robert B. Leighton, Matthew Sands, "The Feynman Lectures on Physics - Vol. 2", Pearson Education Limited, (2012). 3. David J. Griffiths, "Introduction to Electrodynamics" 4th Edition, (Cambridge Univ. Press 2020) 4. W.K.H Panofsky and M. Philips, "Classical Electricity and Magnetism" (Dover Books on Physics, 2012) 5. Arthur F. Kip, "Fundamentals of Electricity and Magnetism", (McGrawHill, 1968) 6. J.H. Fewkes& John Yarwood, "Electricity and Magnetism", Vol. I (Oxford Univ. Press, 1991). 7. B B Laud, "Electromagnetics", New Age International (P) Limited. 8. D.C. Tayal, "Electricity and Magnetism", Himalaya Publishing House Pvt. Ltd., 2019, 4e 9. N. Wadhwani, "Electricity and magnetism", PHI Learning, ISBN: 9788120339651, 9788120339651 10. R.K. Shukla, "Introduction to Electricity & Magnetism", HP Hamilton Limited. **WEB REFERENCES:** 1. MIT Open Learning - Massachusetts Institute of Technology, https://openlearning.mit.edu/ 2. National Programme on Technology Enhanced Learning (NPTEL), https://www.youtube.com/user/nptelhrd				**FINAL EVALUATION THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL**
2	**BSC (NEP) – I YEAR,** **I I SEMESTER** **CREDITS-4** **T:04**	**P-4** **(MAJOR)** **PHY 202-MECHANICS,** **ELECTRICITY & MAGNETISM** **AND OPTICS**	**Course Outcomes:** Experimental physics has the most striking impact on the industry wherever the instruments are used to determine the thermal and electronic properties. The following outcomes are expected by this laboratory course: 1. Students will achieve measurement precision. 2. Students will verify the conceptual learning through experiments in these areas. 3. Students will better appreciate the theoretical concepts in mechanics, electricity and magnetism, and optics through experiments. 4. Online Virtual Lab Experiments are expected to give insight in the simulation techniques, and provide basis for modeling. **Lab Experiment List :** Students have to do total of 06 experiments from the following list taking any two experiments from each group. Students have to do three virtual experiments taking one each from the groups.				

		LAB	**(A)** **Mechanics:**	1. Determination of Young Modulus of the material of a beam by flexure 2. Determination of modulus of rigidity of a wire by statical method 3. Determination of 'g' by compound pendulum. 4. Determination of Surface Tension of water by capillary rise method. 5. Determination Coefficient of Viscosity of water. 6. Determination of the frequency of A.C. Mains	MIN 12 LECTURES	DISCUSSIONS & OFFLINE TEACHING METHOD	STUDENTS WILLGET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH PRACTICALS AND DISCUSSIONS
			(B) **Optics**	1. Measurement of Dispersive power of a given prism 2. Determination of the wavelength of light by Newton's ring. 3. Measurement of height of tower by a Sextant 4. Verification of Brewster's Law 5. Determination of specific rotation of an optically active substance by polarimeter 6. Diffraction at a wire	MIN 12 LECTURES	DISCUSSIONS & OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH PRACTICALS AND DISCUSSIONS
			(C) **Electricity and Magnetism**	1. Determination of High resistance by leakage method. 2. Determination of Mutual Induction by Ballistic galvanometer. 3. Determination of Horizontal component of earth's magnetic field by earth inductor.	MIN 12 LECTURES	DISCUSSIONS & OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH PRACTICALS AND DISCUSSIONS

				4. Determination of Magnetic field of a electro magnet by Ballistic galvanometer. 5. Determination of Time constant striking & extension Potential of neon bulb in CR circuit. 6. Magnetic field by Helmholtz coil.				
			Online Virtual Lab Experiment List/Link MECHANICS MIT Open Learning - Massachusetts Institute of Technology, https://openlearning.mit.edu / Virtual Labs at Amrita Vishwa Vidyapeetham https://vlab.amrita.edu/?sub=1&brch=74 1. Torque and angular acceleration of a fly wheel 2. Torsional oscillations in different liquids 3. Moment of inertia of flywheel 4. Newton's second law of motion 5. Ballistic pendulum 6. Collision balls 7. Projectile motion 8. Elastic and inelastic collision **Online Virtual Lab Experiment List / Link OPTICS** Virtual Labs at Amrita Vishwa Vidyapeetham https://vlab.amrita.edu/?sub=1&brch=189 1. Newton's Rings: Wavelength of light 2. Newton's Rings: Refractive index of liquid 3. Brewster's angle determination 4. Laser beam divergence and spot size Virtual Labs at Amrita Vishwa Vidyapeetham https://vlab.amrita.edu/index.php?sub=1&brch=281 5. Spectrometer: Refractive index of the material of a prism 6. Spectrometer: Dispersive power of a prism **Online Virtual Lab Experiment List / Link** ELECTRICITY AND MAGNETISM Virtual Labs at Amrita Vishwa Vidyapeetham https://vlab.amrita.edu/?sub=1&brch=192 1. Tangent galvanometer 2. Magnetic field along the axis of a circular coil carrying current 3. Deflection magnetometer				

			4. Van de Graaff generator 5. Barkhausen effect 6. Temperature coefficient of resistance 7. Anderson's bridge 8. Quincke's method	
			REFERENCES: 1. B.L. Worsnop, H.T. Flint, “Advanced Practical Physics for Students”, Methuen & Co., Ltd., London, 1962, 9e 2. S. Panigrahi, B. Mallick, “Engineering Practical Physics”, Cengage Learning India Pvt. Ltd., 2015, 1e 3. Anchal Srivastava and R.K. Shukla,“Practical Physics (Electricity, Magnetism and Electronics)”, Published by: New Age International (P) Limited Publishers 4. R.L. Boylestad, L. Nashelsky, “Electronic Devices and Circuit Theory”, Prentice-Hall of India Pvt. Ltd., 2015, 11e 5. A. Sudhakar, S.S. Palli, “Circuits and Networks: Analysis and Synthesis”, McGraw Hill, 2015, 5e **WEB REFERENCES:** Virtual Labs at Amrita Vishwa Vidyapeetham, https://vlab.amrita.edu/?sub=1&brch=194 Virtual Labs an initiative of MHRD Govt. of India, http://vlabs.iitkgp.ac.in/be/# Digital Platforms/Web Links of other virtual labs may be suggested /added to this lists by individual Universities	**FINAL EVALUATION THROUGH INTERNAL PRACTICAL EXAMS UPLODED ON LU EXAM PORTAL**

COLLEGE: MAHARAJA BIJLI PASI GOVERNMENT. P.G. COLLEGE, ASHIANA, LUCKNOW

ACADEMIC CALENDAR : SESSION- (2024-2025)

NAME OF TEACHER: DR. NEETU SINGH/ DR. SEEMA SHUKLA

DEPARTMENT: DEPARTMENT OF **PHYSICS**

CLASS: BSC (NEP)-II YEAR (**III SEMESTER**) Applicable from July 2024 CREDITS:04)

S.NO.	CLASS (YEAR, SEMESTER)	PAPER	UNIT	TOPIC NAME	MONTHLY / WEEKLY PLAN	TEACHING PEDAGOGY	LEARNING OUTCOMES	ANY OTHER DETAIL
01	02	03	04	05	06	07	08	09
1	**BSC (NEP) – II YEAR, III SEMESTER CREDITS-4 T:04**	**P-5 (MAJOR & MINOR)** PHY301- Heat and Thermodynamics	**Course Outcomes:** The students will understand the fundamental principles of thermodynamics, including the first and second laws. 2. They would learn the idea of entropy and associated theorems, and the thermodynamic potentials and their physical meanings. 3. Students will have an understanding of Maxwell's thermodynamic relations. 4. They will acquire the knowledge about the fundamentals of gas kinetic theory and transport phenomenon.					
			UNIT-I	Thermodynamics: Zeroth Law of thermodynamics and temperature. First law and internal energy, conversion of heat into work, Various Thermodynamical Processes, Applications of First Law: General Relation between Cp & Cv, Work Done during Isothermal and Adiabatic Processes, Compressibility & Expansion Coefficient, Reversible & irreversible processes, Second law & Entropy, Carnot's cycle & theorem, Entropy changes in reversible & irreversible processes. Clausius Inequality, entropy and unavailable energy, Entropy-	MIN. 14 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				temperature diagrams, Third law of thermodynamics, Unattainability of absolute zero.Thermodynamic Potentials: Enthalpy, Gibbs, Helmholtz and Internal Energy functions, Maxwell's relations & applications (1) Clausius-Clapeyron Equation, (2)Expression for (CP– CV), (3)CP/CV (4) TdS equations.				
			UNIT-II	Real Gases: Deviations from the Ideal Gas Equation, Behaviour of Real Gases, The Virial Equation. Andrew's Experiments on CO2 Gas. Critical Constants. Boyle Temperature. Van der Waal's Equation of State for Real Gases. Values of Critical Constants. Law of Corresponding States. Joule's Experiment. Free Adiabatic Expansion of a Perfect Gas. Joule-Thomson Porous Plug Experiment. Joule-Thomson Effect for Real and Van der Waal Gases.Temperature of Inversion. JouleThomson Cooling.	MIN 14 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-III	Kinetic Theory of Gases: RMS speed, Kinetic Interpretation of temperature, Degree of Freedom, Law of equipartition of energy (no derivation) and its15 applications to specific heat of gases; mono-atomic and diatomic Gases. Mean free path, Transport Phenomena: Viscosity, Conduction and Diffusion (for vertical case), Derivation of Maxwell's law of distribution of velocities and its experimental verification.	MIN 12 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
				Theory of Radiation: Blackbody				

			UNIT-IV	radiation, Spectral distribution, Concept of Energy Density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan-Boltzmann Law and Wien's displacement law from Planck's law. Solar Constant.	MIN 12 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			References: 1.S. Garg, R. Bansal and C. Ghosh,"Thermal Physics" McGraw Hill Education 1993. 2. Meghnad Saha, and B.N. Srivastava, "A Treatise on Heat"Indian Press 1969. 3. Enrico Fermi , "Thermodynamics" Dover Publications, 2013. 4. M.W. Zemansky and R. Dittman, "Heat and Thermodynamics" McGraw- Hill College 1996. 5. F.W. Sears & G.L. Salinger, "Thermodynamics, Kinetic theory & Statistical thermodynamics" Pearson 1975. **Web References:** 1. MIT Open Learning - Massachusetts Institute of Technology, https://openlearning.mit.edu/ 2. National Programme on Technology Enhanced Learning (NPTEL), https://www.youtube.com/user/nptelhrd 3. Uttar Pradesh Higher Education Digital Library, http://heecontent.upsdc.gov.in/SearchContent.aspx SwayamPrabha - DTH Channel, https://www.swayamprabha.gov.in/index.php/program/current_he/8				**FINAL EVALUATION THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL**
2	**BSC (NEP) – II YEAR, III SEMESTER CREDITS-4 T:04**	**P-6 (MAJOR)** PHY302- Perspectives of Quantum Physics	**Course Outcomes:** Study of the syllabus in Perspectives of Quantum Physics will have the following outcomes: 1. It will help students understand the basics concepts of Quantum Physics. 2. It will make students understand the development of quantum mechanics as a continuity of classical concepts and also as a leap jumpfrom classical to quantum world of Physics. 3. A student will be able to understand as to how the inadequacies of classical Physics were overcome by various concepts and theoretical developments of modern Physics i.e. Understand how major concepts developed and changed over time. 4. A study of the Heisenberg's Uncertainty principle and its applications will make students understand the most modern concept of wave particle duality as to how a wave could behave like a particle and how a particle could behave like a wave. 5. An appreciation of the Schrödinger Wave Equation and its application to various problems in quantum mechanics will make students more analytical. This will give them the needed tool to solve problems across science subjects as Schrödinger equation appears in multidisciplinary subjects. 6. It will make students capable of analyzing and solving problems using reasoning skills based on the concepts of modern physics.					
				Inadequacy of Classical Physics, The				

			UNIT-1	Black Body Radiation, Spectral Distribution of Black Body Radiation, Rayleigh Jeans Law,Wien's Displacement Law, Planck's Radiation Law, Photoelectric Effect, The Quantum Theory of Light, Continuous and characteristic X-ray, X-ray generation and uses, Compton effect, Gravitational Red Shift, de Broglie waves, de Broglie Wave Function and its Properties, Interpretation of wave function, de Broglie Wave Velocity, Complementary principle, Principle of Superposition, Wave and Group Velocity, Motion of Wave Packets, Davisson and Germer Experiment-Diffraction of Electrons, Wave-particle duality Experiment.	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-II	Heisenberg's Uncertainty principle and its applications, Estimating minimum energy of a confined particle using uncertainty principle, Estimate of Hydrogen Ground State Energy; Wave Equation, Wave Equivalent of an unrestricted Particle, Time Dependent Schrödinger wave equation: Eigenvalues and Eigen Functions, Probability Current; Expectation Value, Expectation Values of Energy and Momentum Operators, Ehrenfest theorem.	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-III	Continuity of wave Function, Boundary Condition and Discrete Energy Levels,Steady State Schrödinger Equation, Application of Schrödinger Wave Equation for Particle in an infinitely Rigid Box: Energy and Momentum Quantization, Normalization, Quantum Dot as an	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				example; One Dimensional Step Potential,Rectangular Barrier, Square Well Potential				
			UNIT-IV	Bohr atomic model, de Broglie Waves and Stationary Orbits, Hydrogen Atom Spectrum, Atomic Excitation-Franck Hertz Experiment, Correspondence Principle, Sommerfeld Elliptic Orbits. Electron Angular Momentum, Space Quantization, Electron Spin and Spin Angular Momentum, Spin Magnetic Moment, Stern – Gerlach Experiment, Pauli's Exclusion Principle and PeriodicTable. Fine structure, Spin Orbit Coupling, Spectral Notation for Atomic States, Total Angular Momentum, Vector Model, Coupling schemes (LS and jj) for two electron systems. Zeeman Effect for one Electron System.	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	S TUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

COLLEGE: MAHARAJA BIJLI PASI GOVERNMENT. P.G. COLLEGE, ASHIANA, LUCKNOW

ACADEMIC CALENDAR : SESSION- (2024-2025)

NAME OF TEACHER: DR. NEETU SINGH/ DR. SEEMA SHUKLA

DEPARTMENT: DEPARTMENT OF **PHYSICS**

CLASS: BSC (NEP)-II YEAR (**IV SEMESTER**) Applicable form January 2025 (CREDITS:04)

S.NO.	CLASS (YEAR, SEMESTER)	PAPER	UNIT	TOPIC NAME	MONTHLY / WEEKLY PLAN	TEACHING PEDAGOGY	LEARNING OUTCOMES	ANY OTHER DETAIL
01	02	03	04	05	06	07	08	09
1	**BSC (NEP) – II YEAR, IV SEMESTER CREDITS-4 T:04**	**P-7 (MAJOR & MINOR)** PHY401 - Electronics	**Course Outcomes:** The learning of this paper on electronics will enhance the understanding of the 1. Utility of resonant circuits and AC bridges. 2. The basic electronic devices and their applications. 3. Transistor biasing. 4. Concept of frequency response, bandwidth and audio amplifiers. 5. Feedback circuits 6. The importance of amplitude modulation and demodulation 7. Applications of various electronic instruments.					
			UNIT-I	Circuit fundamentals : Time varying currents, Growth and decay of currents in LR circuit., Charging and discharging of capacitor in RC and LCR circuits. Measurements of High resistance by leakage method , A C circuits : Alternating currents in LCR circuit, Method of imaginaries, Complex impedances, Q factor, Series and parallel resonant circuit, Coupled circuits, Impedance matching, Maximum power transfer theorem,	MIN. 14 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				AC Bridges : measurement of inductance (Maxwell's bridge), and measurement of capacitance (Schering's and Wein's bridge).				
			UNIT-II	Diodes: Qualitative idea of Fermi level. Formation of depletion layer in PN junction diode, field and potential at the depletion layer. Barrier width , Qualitative idea of current flow mechanism in forward and reverse biased diode, current conduction in PN junction diode and its characteristics, Application of PN junction diodes : Transistor as a switch , Half wave rand Full wave (centre tap and bridge) rectifiers, calculation of ripple factor and rectification efficiency, Clippers and Clampers Zener Diode : Characteristics and applications of Zener diode, Avalanche and Zener breakdown, Filter circuits: choke input, capacitor input, L type and pi type filters, voltage regulated power supply.	MIN 14 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-III	Bipolar transistors: PNP and NPN transistors. Study of CB, CE and CC configurations w.r.t. characteristics; active, cutoff and saturation regions, current gains and relations between them, applications of transistors Transistor Biasing: Faithful	MIN 12 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				amplification and need for biasing. Fixed Bias (Base Resistor Method), Collector to Base Bias (Base Bias with Collector Feedback) Emitter Bias (Fixed Bias with Emitter Resistor) and Voltage Divider Bias, DC Load Line and Q-point stabilization, thermal runaway, StabilityFactors, Amplifiers : single stage and multistage transistor amplifier, Theory and working of RC coupled voltage amplifier (Uses of various resistors & capacitors) , frequency response of RC coupled amplifier and its analysis.				
			UNIT-IV	Feedback Circuits: Effects of positive and negative feedback. Feed back factor, loop gain. advantages of negative feedback amplifiers , Input Impedance and Output Impedance, Oscillator Circuits: Use of positive feedback for oscillator operation. Barkhausen criterion for self sustained oscillations, types of oscillator ,introduction to sinusoidal and square wave oscillators, tank circuit , qualitative analysis of Hartley oscillator Basic principle of transmission and reception : principles of amplitude modulation, modulation index, demodulation Electronic Instruments : Multimeter: linear and digital multimeters, measurement of dc voltage, dccurrent, ac voltage, ac current and resistance. Cathode Ray Oscilloscope: Block diagram of basic CRO. Construction	MIN 12 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				of CRT, applications of CRO Electronic components: colour codes of resistors and capacitors, identification ans testing of active and passive components.				
			References: 1. B.G. Streetman, S.K. Banerjee, "Solid State Electronic Devices", Pearson Education India, 2015, 7e 2. W.D. Stanley, "Electronic Devices: Circuits and Applications", Longman Higher Education, 1989 3. J.D. Ryder, "Electronic Fundamentals and Applications", Prentice-Hall of India Private Limited, 1975, 5e 20 4. R.L. Boylestad, L. Nashelsky, "Electronic Devices and Circuit Theory",Prentice-Hall of India Pvt. Ltd., 2015, 11e 5. J. Millman, C.C. Halkias, Satyabrata Jit, "Electronic Devices and Circuits",McGraw Hill, 2015, 4e 6. A. Sudhakar, S.S. Palli, "Circuits and Networks: Analysis and Synthesis",McGraw Hill, 2015, 5e 7. B. L. Theraja, " Basic Electronics ", S. Chand, Lucknow 8. S.L. Gupta, V. Kumar, "Handbook of Electronics", Pragati Prakashan,Meerut, 2016, 43e **WEB REFERENCES:** 1. MIT Open Learning - Massachusetts Institute of Technology, https://openlearning.mit.edu/ 2. National Programme on Technology Enhanced Learning (NPTEL), https://www.youtube.com/user/nptelhrd 3. Uttar Pradesh Higher Education Digital Library, http://heecontent.upsdc.gov.in/SearchContent.aspx Swayam Prabha - DTH Channel, https://www.swayamprabha.gov.in/index.php/program/current_he/8 Suggested Equivalent Online Courses 1. Coursera, https://www.coursera.org/browse/physical-science-andengineering/physics-and-astronomy 2. edX, https://www.edx.org/course/subject/physics 3. MIT Open Course Ware - Massachusetts Institute of Technology, https://ocw.mit.edu/courses/physics/ 4. Swayam - Government of India, https://swayam.gov.in/explorer?category=Physics National Programme on Technology Enhanced Learning (NPTEL), https://nptel.ac.in/course.html				**FINAL EVALUATION THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL**
2	**BSC (NEP) – II YEAR,**	**P-8**	**Course Outcomes:** 1. Experimental physics has the most striking impact on the industry wherever the instruments are used to determine the thermal and electronic properties.					

	IV SEMESTER **CREDITS-4** **T:04**	**(MAJOR)** **PHY402-Heat and Electronics LAB**	2. Measurement precision and perfection is achieved through Lab Experiments. 3. Online Virtual Lab Experiments give an insight in simulation techniques and provide a basis for modeling. Lab Experiment List Students have to do three experiments from Group A and three experiments from Group B Students have to do one experiment each from virtual labs of Heat and Thermodynamics, and Electronics					
			Group A Heat and Thermodynamics	1. Mechanical Equivalent of Heat by Callender and Barne's method 2. Coefficient of thermal conductivity of copper by Searle's apparatus 3. Value of Stefan's constant 4. Variation of thermo-emf across two junctions of a thermocouple with temperature 5. Temperature coefficient of resistance by Platinum resistance Thermometer.	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			Group B Electronics	1. PN Junction/ Zener diode characteristics 2. Half wave & full wave rectifiers and Filter circuits 3. Characteristics of a transistor (PNP / NPN) in CE, CB and CC configurations 4. Unregulated and Regulated power supply 5. Diode as clipper and Clamper 6. Frequency response of RC coupled amplifier 7. Diode as clipper and Clamper 8. Various measurements with Cathode Ray Oscilloscope (CRO) 9. Charging and discharging in RC circuits 10. A.C. Bridges: experiments based on measurement of L and C 11. Resonance in series and parallel RCL circuit	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
				Virtual Labs at Amrita Vishwa Vidyapeetham	MIN	OFFLINE TEACHING	STUDENTS WILL	EVALUATION

			HEAT:	https://vlab.amrita.edu/?sub=1&brch=194 1. Heat transfer by radiation 2. Heat transfer by conduction 3. Heat transfer by natural convection 4. The study of phase change 5. Blackbody radiation: Determination of Stefan's constant 6. Newton's law of cooling 7. Lee's disc apparatus 8. Thermo-couple: Seebeck effect	13 LECTURES	METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	THROUGH ASSIGNMENTS AND DISCUSSIONS
			ELECTRONICS:	Virtual Labs an initiative of MHRD Govt. of India http://vlabs.iitkgp.ernet.in/be/index.html# 1. Familiarisation with resistor 2. Familiarisation with capacitor 3. Familiarisation with inductor 4. Ohm's Law 5. VI characteristics of a diode 6. Half & Full wave rectification 7. Capacitative rectification 8. Zener Diode voltage regulator 9. BJT common emitter characteristics 10. BJT common base characteristics 11. Studies on BJT CE amplifier 12. RC frequency response http://vlabs.iitkgp.ac.in/psac/# 13. Diode as Clippers 14. Diode as Clampers 15. BJT as switch and Load Lines http://vlabs.iitkgp.ac.in/be/# 16. RC frequency response Virtual Labs at Amrita Vishwa Vidyapeetham https://vlab.amrita.edu/index.php?sub=1&brch=201 17. Hartley oscillator	MIN 13 LECTURES	OFFLINE TEACHING METHOD (NOTES IN FORM OF PDF,AUDIO/ VIDEO,CLASS ROOM TEACHING METHOD)	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

				18. Colpitt oscillator				
			REFERENCES: 1. B.L. Worsnop, H.T. Flint, “Advanced Practical Physics for Students”,Methuen & Co., Ltd., London, 1962, 9e 2. S. Panigrahi, B. Mallick, “Engineering Practical Physics”, Cengage Learning India Pvt. Ltd., 2015, 1e 3. Anchal Srivastava and R.K. Shukla,“Practical Physics (Electricity, Magnetism and Electronics)”, Published by: New Age International (P) Limited Publishers 4. R.L. Boylestad, L. Nashelsky, “Electronic Devices and Circuit Theory”,Prentice-Hall of India Pvt. Ltd., 2015, 11e 5. A. Sudhakar, S.S. Palli, “Circuits and Networks: Analysis and Synthesis”,McGraw Hill, 2015, 5e **WEB REFERENCES:** Virtual Labs at Amrita Vishwa Vidyapeetham,https://vlab.amrita.edu/?sub=1&brch=194 Virtual Labs an initiative of MHRD Govt. of India,http://vlabs.iitkgp.ac.in/be/# Digital Platforms/Web Links of other virtual labs may be suggested /added to this lists by individual Universities				**FINAL EVALUATION THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL**

COLLEGE: MAHARAJA BIJLI PASI GOVERNMENT. P.G. COLLEGE, ASHIANA, LUCKNOW

ACADEMIC CALENDAR : SESSION- (2024-2025)

NAME OF TEACHER: DR. NEETU SINGH/ DR. SEEMA SHUKLA

DEPARTMENT: DEPARTMENT OF **PHYSICS**

CLASS: BSC-III YEAR (**V SEMESTER**) Applicable from July 2024(CREDITS:04)

XS.NO.	CLASS (YEAR, SEMESTER)	PAPER	UNIT	TOPIC NAME	MONTHLY/WEEKLY PLAN	TEACHING PEDAGOGY	LEARNING OUTCOMES	ANY OTHER DETAIL
01	02	03	04	05	06	07	08	09
I	BSC-III YEAR, V SEM	PAPER –I ELECTRONICS	UNIT-I	DIODES.....	MIN. 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-II	TRANSISTORS.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-III	FIELD EFFECT TRANSISTORS.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-IV	NUMBER SYSTEM AND CODES.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			REFERENCE BOOK: 1.SEMICONDUCTOR DEVICES : KANAAN KANO 2.ELECTRONIC PRINCIPLES : A P MALVINO					**FINAL EVALUATION THROUGH INTERNAL**

								ASSESMENT UPLODED ON LU EXAM PORTAL
II	**BSC-III YEAR, V SEM**	**PAPER-II** **NUCLEAR PHYSICS**	UNIT-1	GENERAL PROPERTIES OF NUCLEUS.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-II	NUCLEAR MODELS	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-III	NUCLEAR REACTIONS.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-IV	ELEMENTARY PARTICLES.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			REFERENCE BOOK: 1.INTRODUCTION TO THE PHYSICS OF NUCLEI & PARTICLES : R.A.DUNLAP (THOMSON ASIA,2004) 2.RADIATION DETECTION AND MEASUREMENT : G.F. KNOLL (JOHN WILEY & SONS ,2000).					**FINAL EVALUATION THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL**
III	**BSC-III YEAR, V SEM**	**PAPER-III** **PHYSICS PRACTICALS**		**1**.TO STUDY THE CHARACTERISTICS OF FIELD EFFECT TRANSISTOR **2.**STUDY OF FET AS A VOLTAGE VARIABLE RESISTOR (VVR) AND APPLICATION OF FET AS A VVR IN VOLTAGE CONTROLLED ATTENUATOR (VCA) **3**.TO STUDY THE FREQUENCY RESPONSE OF RC COUPLED TRANSISTOR AMPLIFIER **4**.STUDY OF IC AMPLIFIER **5**.STUDY OF LOGIC GATES	MIN 48 LECTURES	DISCUSSIONS & OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH PRACTICALS AND DISCUSSIONS

				6.TO DETERMINE THE VELOCITY OF SOUND BY CRO **7**.TO DETERMINE STEFAN'S CONSTANT **8**.TO STUDY SERIES AND PARALLEL LCR CIRCUIT **9**.TO STUDY CLIPPER AND CLAMPER CIRCUITS.				
			REFERENCE BOOK: 1. ADVANCED PRACTICAL PHYSICS FOR STUDENTS: B.L. WORSNOP AND H.T. FLINT, 1971, ASIA PUBLISHING HOUSE. 2. A TEXT BOOK OF PRACTICAL PHYSICS: I. PRAKASH AND RAMAKRISHNA 11TH EDITION, KITAB MAHAL. 3. A LABORATORY MANUAL OF PHYSICS FOR UG CLASSES: D.P. KHANDELWAL, 1985, VIKAS PUBLICATIONS.				**FINAL EVALUATION THROUGH PRACTICALS UPLODED ON LU EXAM PORTAL**

COLLEGE: MAHARAJA BIJLI PASI GOVERNMENT. P.G. COLLEGE, ASHIANA, LUCKNOW

ACADEMIC CALENDAR : SESSION- (2024-2025)

NAME OF TEACHER: DR. NEETU SINGH/ DR. SEEMA SHUKLA

DEPARTMENT: DEPARTMENT OF **PHYSICS**

CLASS: BSC-III YEAR (**VI SEMESTER**) Applicable from January 2025 (CREDITS:04)

S.NO.	CLASS (YEAR, SEMESTER)	PAPER	UNIT	TOPIC NAME	MONTHLY/WEEKLY PLAN	TEACHING PEDAGOGY	LEARNING OUTCOMES	ANY OTHER DETAIL
01	02	03	04	05	06	07	08	09
I	**BSC-III YEAR, VI SEM**	**PAPER –I** **MATHEMATICAL METHODS AND NUMERICAL TECHNIQUES**	UNIT-I	COMPLEX NUMBERS.....	MIN. 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-II	INITIAL AND BOUNDARY VALUE PROBLEMS.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-III	MEAN VALUE THEOREM.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-IV	NUMERICAL METHODS.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			REFERENCE BOOK: MATHEMATICAL METHODS FOR PHYSICISTS;WEBER,2005,HARRIS,ELSEVIER					**FINAL EVALUATION**

								THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL
II	**BSC-III YEAR, VI SEM**	**PAPER-II** **ELEMENTS OF RELATIVISTIC AND CLASSICAL MECHANICS**	UNIT-1	MICHELSON-MORRELY.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-II	SPACETIME DIAGRAMS	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-III	HOLONOMIC AND NON-HOLONOMIC CONSTRAINTS.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-IV	TWO BODY CENTRAL FORCE PROBLEM.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			REFERENCE BOOK: INTRODUCTION TO SPECIAL RELATIVITY ; R. RESNICK (WILEY- EASTERN)					**FINAL EVALUATION THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL**
III	**BSC-III YEAR, VI SEM**	**PAPER-III** **SOLID STATE PHYSICS**	UNIT-1	CRYSTAL STRUCTURE.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS

			UNIT-II	CRYSTAL BINDINGS.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-III	ELECTRICAL PROPERTIES OF MATERIALS.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			UNIT-IV	MAGNETIC PROPERTIES OF MATTER.....	MIN 12 LECTURES	OFFLINE TEACHING METHOD	STUDENTS WILL GET THE UNDERSTANDING OF THE TOPIC DISCUSSED.	EVALUATION THROUGH ASSIGNMENTS AND DISCUSSIONS
			REFERENCE BOOK: 1. INTRODUCTION TO SOLID STATE PHYSICS: CHARLES KITTEL 2. SOLID STATE PHYSICS: ADRIANUS J. DEKKER					**FINAL EVALUATION THROUGH INTERNAL ASSESMENT UPLODED ON LU EXAM PORTAL**