



Aggarwal College Ballabgarh

LESSON PLAN

18 WEEKS (JULY-NOVEMBER 2024)

NAME OF FACULTY: Dr. Devender

CLASS: B.Sc. II		SEMESTER: 3	SECTION: A
SUBJECT: Optics		Course Code: Phy 303	
WEEK	DATE	TOPICS TO BE COVERED	
1	22-7-2024	Introduction & assumptions of Geometrical Optics	
	23-7-2024	Matrix methods in paraxial optics	
	26-7-2024	Effects of Translation	
	28-7-2024	SUNDAY	
2	29-7-2024	Effects of Refraction	
	30-7-2024	Derivation of thin lens formula	
	2-8-2024	Derivation of thick lens formula	
	4-8-2024	SUNDAY	
3	5-8-2024	Unit Planes in system of thin lenses	
	6-8-2024	Nodal Planes in system of thin lenses	
	9-8-2024	Chromatic Aberration	
	11-8-2024	SUNDAY	
4	12-8-2024	Spherical Aberration	
	13-8-2024	Astigmatism	
	16-8-2024	Coma	
	18-8-2024	SUNDAY	
	19-08-2024	HOLIDAY-RAKSHABANDHAN	

5	20-08-2024	Distortion & Remedies of Disorders
	23-8-2024	Multiple Choice Question (MCQ) related to unit – II
	25-8-2024	SUNDAY
6	26-8-2024	HOLIDAY-JANAMASHTMI
	27-8-2024	Numerical & conceptual problems related to unit – II
	30-8-2024	Unit Test & Assignment
	1-9-2024	SUNDAY
7	2-9-2024	Idea of Physical Optics
	3-9-2024	Introduction to Division of Wavefront & Amplitude
	6-9-2024	Fresnel's Biprism & its experimental Set up
	8-9-2024	SUNDAY
8	9-9-2024	Application of Fresnel's Biprism to determination of wave length of sodium light
	10-9-2024	Application of Fresnel's Biprism to determination of thickness of Mica sheet
	13-9-2024	Lloyd's mirror
	15-9-2024	SUNDAY
9	16-9-2024	Phase change on Reflection
	17-9-2024	Numerical & conceptual problems related to unit - III
	20-9-2024	Class Test - II
	22-9-2024	SUNDAY
10	23-9-2024	HOLIDAY-HARYANA SHAHEEDI DIWAS
	24-9-2024	Introduction to Fourier Analysis
	27-9-2024	Speed of transverse waves on a uniform string
	29-9-2024	SUNDAY
11	30-10-2024	Speed of longitudinal waves in a fluid
	1-10-2024	Superposition of Waves

	4-10-2024	Fourier Analysis of complex waves
	6-10-2024	SUNDAY
12	7-10-2024	Application of Fourier analysis for the solution of triangular waves
	8-10-2024	Application of Fourier analysis for the solution of rectangular waves
	11-10-2024	Fourier Analysis based MCQ
	13-10-2024	SUNDAY
13	14-10-2024	Application of Fourier analysis for the solution of half wave rectifier outputs
	15-10-2024	Application of Fourier analysis for the solution of half wave rectifier outputs contd.
	18-10-2024	Application of Fourier analysis for the solution of full wave rectifier outputs
	20-10-2024	SUNDAY
14	21-10-2024	Application of Fourier analysis for the solution of full wave rectifier outputs contd.
	22-10-2024	Fourier transforms
	25-10-2024	Properties of Fourier transforms
	27-10-2024	SUNDAY
15	28-10-2024	DIWALI BREAK
	29-10-2024	DIWALI BREAK
	1-11-2024	DIWALI BREAK
	3-11-2024	SUNDAY
16	4-11-2024	Application of Fourier transform to exponential function
	5-11-2024	Revision & problems form unit - 1
	8-11-2024	Application of Fourier transform to step function
	10-11-2024	SUNDAY
17	11-11-2024	Quiz based on conceptual problems related to unit – 1
	12-11-2024	Numerical problems related to unit – 1
	15-11-2024	HOLIDAY-GURUNANAK DEV JAYANTI

	17-11-2024	SUNDAY
18	18-11-2024	Assignment - II
	19-11-2024	Class Test – II
	22-11-2024	Doubt Session & Revision
	24-11-2024	SUNDAY



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LESSON PLAN

18 WEEKS (JULY-NOVEMBER 2024)

NAME OF FACULTY: Dr. Devender

CLASS: M.Sc. II

SEMESTER: 3

SECTION: A

SUBJECT: Nuclear & Particle Physics

Course Code: 23PHY23C1

WEEK	DATE	TOPICS TO BE COVERED
1	22-7-2024	Nuclear Properties
	23-7-2024	Similarities between liquid drop and nucleus
	24-7-2024	Merits & Demerits of liquid drop assumption
	25-7-2024	Liquid drop model
	26-7-2024	Various type of Energies
	27-7-2024	Semi-empirical mass formula
	28-7-2024	SUNDAY
2	29-7-2024	Significance of various terms in Semi-empirical mass formula
	30-7-2024	Mass Parabola
	31-7-2024	HOLIDAY-SARDAR UDHAM SINGH SHAHEEDI DIVAS
	1-8-2024	Stability from Mass Parabola
	2-8-2024	Prediction of stability against β -decay
	3-8-2024	Stability limits against spontaneous fission
	4-8-2024	SUNDAY
3	5-8-2024	Merits of Liquid drop model
	6-8-2024	limitations of Liquid drop model
	7-8-2024	Shell model
	8-8-2024	Experiment evidences for shell effect

	9-8-2024	Magic numbers
	10-8-2024	Main assumptions of the single particle shell model
	11-8-2024	SUNDAY
4	12-8-2024	Spin-orbit coupling in single particle shell model
	13-8-2024	Estimation of spin
	14-8-2024	Parities of nuclei by single particle shell model
	15-8-2024	HOLIDAY-INDEPENDENCE DAY
	16-8-2024	Spin & Parity
	17-8-2024	Magnetic moments of nuclei by single particle shell model
	18-8-2024	SUNDAY
5	19-08-2024	HOLIDAY-RAKSHABANDHAN
	20-08-2024	Problems from Unit - II
	21-8-2024	Assignment – I & Class Test - I
	22-8-2024	Types of Nuclear Decays
	23-8-2024	Alpha (α) decay
	24-8-2024	Gamow's theory of alpha decay
	25-8-2024	SUNDAY
6	26-8-2024	HOLIDAY-JANAMASHTMI
	27-8-2024	α - disintegration energy
	28-8-2024	Range of α -particles
	29-8-2024	Range – energy relationship for α -particles
	30-8-2024	Geiger – Nuttall law
	31-08-2024	Beta decay
	1-9-2024	SUNDAY

7	2-9-2024	Pauli's neutrino hypothesis
	3-9-2024	Fermi theory of beta decay
	4-9-2024	Curie plot
	5-9-2024	Selection rules for beta decay
	6-9-2024	Fermi and Gamow-Teller Transitions
	7-9-2024	Detection and properties of neutrino
	8-9-2024	SUNDAY
8	9-9-2024	Gamma decay
	10-9-2024	Multipole transitions in nuclei
	11-9-2024	comprehension
	12-9-2024	Angular momentum and parity selection rules
	13-9-2024	Internal conversion
	14-9-2024	Nuclear isomerism
	15-9-2024	SUNDAY
9	16-9-2024	Problems from Unit - III
	17-9-2024	Class Test - II
	18-9-2024	Classifications of elementary particles
	19-9-2024	fermions and bosons, particles and antiparticles
	20-9-2024	Fundamental interactions in nature
	21-9-2024	Type of interaction between elementary particles
	22-9-2024	SUNDAY
10	23-9-2024	HOLIDAY-HARYANA SHAHEEDI DIWAS
	24-9-2024	Symmetry and conservation laws
	25-9-2024	Classification of hadrons
	26-9-2024	Strangeness & Hypercharge

	27-9-2024	Gelleman - Nishijima formula
	28-9-2024	Elementary ideas of CP and CPT invariance
	29-9-2024	SUNDAY
11	30-10-2024	Quark model, Baryon Octet, Meson Octet, Baryon Decuplet
	1-10-2024	Gell-Mann-Okubo formula for octet and decuplet
	2-10-2024	HOLIDAY-GANDHI JAYANTI
	3-10-2024	HOLIDAY-MAHARAJA AGARSEIN JAYANTI
	4-10-2024	Necessity of introducing the colour quantum number
	5-10-2024	SU (2) and SU (3) multiples (qualitative only)
	6-10-2024	SUNDAY
12	7-10-2024	Questions from previous years
	8-10-2024	Doubts from Unit - IV
	9-10-2024	Assignment – II & Class Test - III
	10-10-2024	Two Nucleon system
	11-10-2024	Schrodinger equation for two nucleon system
	12-10-2024	HOLIDAY-DUSSEHRA
	13-10-2024	SUNDAY
13	14-10-2024	Energy Eigen values & Eigen functions
	15-10-2024	Common Potentials
	16-10-2024	Wigner potential
	17-10-2024	HOLIDAY-VALMIKI JAYANTI
	18-10-2024	Majorana potential
	19-10-2024	Bartlett potential
	20-10-2024	SUNDAY
14	21-10-2024	Heisenberg potential

	22-10-2024	The ground state of deuteron
	23-10-2024	Ortho & para states
	24-10-2024	Singlet & triplet states
	25-10-2024	Particle in a box
	26-10-2024	Square well solution for the deuteron
	27-10-2024	SUNDAY
15	28-10-2024	DIWALI BREAK
	29-10-2024	DIWALI BREAK
	30-11-2024	DIWALI BREAK
	31-10-2024	DIWALI BREAK
	1-11-2024	DIWALI BREAK
	2-11-2024	DIWALI BREAK
	3-11-2024	SUNDAY
16	4-11-2024	Qualitative features of Nucleon – nucleon scattering
	5-11-2024	Range in n – p scattering
	6-11-2024	Range in n – p scattering contd.
	7-11-2024	Scattering length
	8-11-2024	Meson theory of nuclear force
	9-11-2024	Qualitative discussion of Meson theory
	10-11-2024	SUNDAY
17	11-11-2024	Compound nuclear reactions
	12-11-2024	Compound nuclear reactions contd.
	13-11-2024	Direct nuclear reactions
	14-11-2024	Reaction cross – section
	15-11-2024	HOLIDAY-GURUNANAK DEV JAYANTI

	16-11-2024	Reaction cross-section in terms of partial wave treatment
	17-11-2024	SUNDAY
18	18-11-2024	Balance of mass in nuclear reactions
	19-11-2024	Balance of energy in nuclear reactions
	20-11-2024	Q value equation and its solution
	21-11-2024	Doubts from Unit - I
	22-11-2024	Assignment – III & Class Test - IV
	23-11-2024	Discussion on questions from previous year papers
	24-11-2024	SUNDAY



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LESSON PLAN

18 WEEKS (JULY-NOVEMBER 2024)

NAME OF FACULTY: Dr. Devender

CLASS: M.Sc. II		SEMESTER: 3	SECTION: A
SUBJECT: Electrodynamics & Wave Propagation Course Code: 23PHY23C2			
WEEK	DATE	TOPICS TO BE COVERED	
1	22-7-2024	Relativistic Electrodynamics, Postulates of STR & Lorentz's transformations	
	23-7-2024	Invariance of D'Alembertin operator, Invariance of charge	
	24-7-2024	Transformation of current density, Electric field measurement in different frames	
	25-7-2024	Minkowski Space & Geometrical interpretation of Lorentz Transformations	
	26-7-2024	Four Vectors	
	27-7-2024	Prove that $x^2+y^2+z^2-c^2t^2$ is invariant under Lorentz transformations	
	28-7-2024	SUNDAY	
2	29-7-2024	Describe Minkowski Space & space time curvature	
	30-7-2024	Lorentz Transformations in four vector form	
	31-7-2024	HOLIDAY-SARDAR UDHAM SINGH SHAHEEDI DIVAS	
	1-8-2024	Transformations for charge & current densities	
	2-8-2024	Transformations of Electromagnetic potentials	
	3-8-2024	Lorentz condition (covariant form)	
	4-8-2024	SUNDAY	
	5-8-2024	Significance of Maxwell's equations & four vectors	

3	6-8-2024	Maxwell's equations in terms of four vectors
	7-8-2024	Electromagnetic field Tensors
	8-8-2024	Maxwell's equations (covariance) in four tensor form
	9-8-2024	Lorentz Transformations of Electric field
	10-8-2024	Lorentz Transformations of Magnetic field
	11-8-2024	SUNDAY
4	12-8-2024	Show that equation of continuity is self-contained in Maxwell's field equations
	13-8-2024	Electromagnetic field due to a moving charge
	14-8-2024	Lorentz force on a charged particle
	15-8-2024	HOLIDAY-INDEPENDENCE DAY
	16-8-2024	Covariant form of Lorentz force
	17-8-2024	Transformation law of force
	18-8-2024	SUNDAY
5	19-08-2024	HOLIDAY-RAKSHABANDHAN
	20-08-2024	Laplacian & D'Alembertian operator under L.T.
	21-8-2024	Numerical Problems
	22-8-2024	Relativistic Electrodynamics: Queries/questions/ problems
	23-8-2024	Radiating systems
	24-8-2024	Field and radiation of a localized source
	25-8-2024	SUNDAY
6	26-8-2024	HOLIDAY-JANAMASHTMI
	27-8-2024	Field and radiation of a localized source contd..
	28-8-2024	Field and radiation of a localized source contd....
	29-8-2024	Oscillating electric dipole

	30-8-2024	Oscillating electric dipole contd
	31-08-2024	Centre fed linear antenna
	1-9-2024	SUNDAY
7	2-9-2024	Centre fed linear antenna contd
	3-9-2024	Centre fed linear antenna contd
	4-9-2024	Lienard - Wiechert potential
	5-9-2024	Electric fields due to a uniformly moving charge and accelerated charge
	6-9-2024	Electric fields due to a uniformly moving charge and accelerated charge contd..
	7-9-2024	Magnetic fields due to a uniformly moving charge and accelerated charge
	8-9-2024	SUNDAY
8	9-9-2024	Linear acceleration and angular distribution of power radiated
	10-9-2024	Circular acceleration and angular distribution of power radiated
	11-9-2024	Radiative reaction force
	12-9-2024	Scattering of radiation
	13-9-2024	Absorption of radiation
	14-9-2024	Assignment – I & Class Test of Unit - I
	15-9-2024	SUNDAY
9	16-9-2024	Thompson scattering
	17-9-2024	Rayleigh scattering
	18-9-2024	Normal dispersion
	19-9-2024	Anomalous dispersion
	20-9-2024	Ionosphere
	21-9-2024	Propagation of electromagnetic wave through ionosphere
	22-9-2024	SUNDAY

10	23-9-2024	HOLIDAY-HARYANA SHAHEEDI DIWAS
	24-9-2024	Propagation of electromagnetic wave through ionosphere contd
	25-9-2024	Propagation of electromagnetic wave through ionosphere contd
	26-9-2024	Propagation of electromagnetic wave through ionosphere contd
	27-9-2024	Reflection of electromagnetic waves by ionosphere
	28-9-2024	Reflection of electromagnetic waves by ionosphere contd
	29-9-2024	SUNDAY
11	30-10-2024	Motion of charged particles in uniform Electric fields
	1-10-2024	Motion of charged particles in uniform magnetic fields
	2-10-2024	HOLIDAY-GANDHI JAYANTI
	3-10-2024	HOLIDAY-MAHARAJA AGARSEIN JAYANTI
	4-10-2024	Time varying fields
	5-10-2024	Fields at the surface of a conductor
	6-10-2024	SUNDAY
12	7-10-2024	Fields within surface of a conductor
	8-10-2024	Problems & Doubts from Unit - III
	9-10-2024	Discussion on previous year question papers
	10-10-2024	Assignment - II
	11-10-2024	Class Test - II
	12-10-2024	HOLIDAY-DUSSEHRA
	13-10-2024	SUNDAY
13	14-10-2024	Introduction to Wave guides
	15-10-2024	Different types & parameters of waveguides
	16-10-2024	Modes in a rectangular wave guide
	17-10-2024	HOLIDAY-VALMIKI JAYANTI

	18-10-2024	Modes in a rectangular wave guide contd
	19-10-2024	Attenuation in wave guides
	20-10-2024	SUNDAY
14	21-10-2024	Attenuation in wave guides contd
	22-10-2024	Dielectric wave guides
	23-10-2024	Dielectric wave guides contd.
	24-10-2024	Transmission lines
	25-10-2024	Circuit representation of parallel plate transmission lines
	26-10-2024	Circuit representation of parallel plate transmission lines contd
	27-10-2024	SUNDAY
15	28-10-2024	DIWALI BREAK
	29-10-2024	DIWALI BREAK
	30-11-2024	DIWALI BREAK
	31-10-2024	DIWALI BREAK
	1-11-2024	DIWALI BREAK
	2-11-2024	DIWALI BREAK
	3-11-2024	SUNDAY
16	4-11-2024	Signal Transmission
	5-11-2024	Transmission line equations
	6-11-2024	Solution of transmission line equations
	7-11-2024	Solution of transmission line equations contd
	8-11-2024	Solution to n transmission line equations
	9-11-2024	Solution to n transmission line equations contd
	10-11-2024	SUNDAY
17	11-11-2024	Characteristic impedance

	12-11-2024	Propagation coefficient
	13-11-2024	Ultra-high & Low frequencies
	14-11-2024	Low loss radio frequency
	15-11-2024	HOLIDAY-GURUNANAK DEV JAYANTI
	16-11-2024	Low loss radio frequency contd
	17-11-2024	SUNDAY
18	18-11-2024	Ultra-High Frequency transmission lines
	19-11-2024	Numerical problems
	20-11-2024	Doubts from Unit - IV
	21-11-2024	Assignment
	22-11-2024	Class Test
	23-11-2024	Discussion on previous year question papers
	24-11-2024	SUNDAY