

Dr. BhimRao Ambedkar Govt. College Jagdishpura (Kaithal)

Lesson Plan: (from 22 JULY, 2024 to 22 NOVEMBER, 2024)

Name of Assistant Professor: **Dr. Neelam**

Class and Section: **BSc Non Medical III /Section 1**

Subject: **Physics (PH-502 NUCLEAR PHYSICS)**

Dates	Lesson Plan
JULY : WEEK -4	INTRODUCTION TO THE COURSE.
WEEK-5	Unit I: NUCLEAR STRUCTURE AND PROPERTIES OF NUCLEI : Nuclear composition (p-e and p-n hypothesis).
AUGUST WEEK-1	Nuclear Properties: nuclear size, spin , parity, Statistics, dipole moment, quadruple moment (shape concept)
WEEK-2	Determination of mass : Bain Bridge. Bain bridge and Jordan mass spectrograph.
WEEK-3	Determination of Charge by Mosley law. Determination of size of nucleus by Rutherford back scattering experiment.
WEEK-4	Mass and binding Energy, systematic of nuclear binding energy. nuclear stability
SEPTEMBER WEEK -1	Unit II : Nuclear Radiation Decay Process : Alpha disintegration and its theory. Energetics of alpha decay.
WEEK-2	Origin of Continuous beta spectrum (neutrino hypothesis). types of beta decay and energetics of beta decay, nature of gamma rays and energetic of beta decay.
WEEK-3	Radiation Interaction : Interaction of Heavy charged particle (alpha particle). energy loss of heavy charged particle (idea of Bethe formula. no derivation). Range and straggling of alpha particle, Geiger -Nuttal Law.
WEEK-4	Interaction of light charged particle (beta particle). energy loss beta particle (ionization), Range of electrons, absorption of beta particles
OCTOBER : WEEK 1	Interaction of Gamma Ray, passage of Gamma radiation through matter (photoelectric, Compton and pair production effect) electron-positron annihilation. Absorption of Gamma rays (Mass attenuation coefficient) and its application.
WEEK-2	Unit III Nuclear Accelerator Linear Accelerator, Tandem Accelerator, Cyclotron and Betatron accelerator.
WEEK-3	Nuclear Radiation Detectors : Gas filled counters, Ionization chamber, Proportional Counter
WEEK-4	G.M. Counter (detailed study), scintillation counter and semiconductor counter
WEEK-5	Diwali Vacations (27 OCTOBER- 03 NOVEMBER)
NOVEMBER : WEEK-1	Unit :IV Nuclear Reactions : Nuclear Reactions, elastic scattering, inelastic scattering, Nuclear disintegration, photonuclear reactions, Radiative capture reactions
WEEK-2	Heavy ion reactions and spallation reactions, conservation laws, Q-value threshold
WEEK-3	Nuclear Reactor : Nuclear Reactor , General aspects of Reactor design, Nuclear fission and nuclear fusion reactors (Principle, construction, working and uses)
23 NOVEMBER 2024	EXAM ONWARD

Neelam

Dr. Neelam

Assistant Professor Physics

Dr. B.R.A. Govt. College Kaithal

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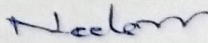
Lesson Plan: (from 22 JULY, 2024 to 22 NOVEMBER, 2024)

Name of Assistant Professor: **Dr. Neelam**

Class and Section: **BSc in Life Science I /Section 1**

Subject: **Physics Minor (Elementary Mechanics- B23-PHY-103)**

Dates	Lesson Plan
JULY : WEEK -4	INTRODUCTION TO THE COURSE.
WEEK-5	UNIT I : FUNDAMENTAL OF DYNAMICS : Rigid Body, Moment of Inertia, Radius of Gyration, Theorem of perpendicular and parallel axis (with proof)
AUGUST WEEK-1	Moment of Inertia of Ring, Disc
WEEK-2	Moment of Inertia of Angular Disc and Solid Cylinder
WEEK-3	UNIT II: ELASTICITY Deforming force, Elastic limit, stress, strain and their types, Hooke's law.
WEEK-4	Module of elasticity, Relation between shear angle and angle of twist, Poisson's ratio and its limiting value,
SEPTEMBER WEEK -1	Torque required for twisting cylinder
WEEK-2	UNIT III : SPECIAL THEORY OF RELATIVITY : : Michelson's Morley experiment and its outcomes, Postulates of special theory of relativity
WEEK- 3	Lorentz Transformations, Lorentz contraction, Time dilation.
WEEK- 4	Relativistic transformation of velocity, relativistic addition of velocities
OCTOBER : WEEK 1	Variation of mass-energy equivalence
WEEK-2	UNIT 4: Gravitation and central force motion: Law of gravitation, Potential and field due to spherical shell and solid sphere.
WEEK-3	Motion of a particle under central force field
WEEK-4	Normal coordinates and normal modes, Normal modes of vibration for given spring mass system
WEEK-5	Diwali Vacations (27 OCTOBER- 03 NOVEMBER)
NOVEMBER : WEEK-1	Possible angular frequencies of oscillation of two identical simple pendulums of length (l) and small bob of mass (m) joined together with spring of spring constant (k).
WEEK-2	REVISION
WEEK-3	
23 NOVEMBER 2024	EXAM ONWARD


Dr. Neelam
Assistant Professor Physics
Dr. B.R.A. Govt. College Kaithal