Lesson Plan

Name of the Assistant/ Associate Professor: - Dr. Manjeet Singh

Class and Section: M.Sc. Physics 4th Sem.

Subject: Nuclear Physics-II Paper code: PHY-403B

Week	Date	Topics
1	1-Jan-18	**Unit I: The Two Nucleon Problem:** Qualitative features
	2-Jan-18	phenomenological potentials
	3-Jan-18	Exchange forces
	4-Jan-18	generalized Pauli principle.
	5-Jan-18	The ground state of deuteron
	6-Jan-18	Range-depth relationship for square well potential
	7-Jan-18	Sunday
2	8-Jan-18	Neutron-Proton scattering at low energies (below 10 Mev)
	9-Jan-18	Neutron-Proton scattering at low energies (below 10 Mev) (continue)
	10-Jan-18	Concept of scattering length
	11-Jan-18	Concept of scattering length and its interpretation
	12-Jan-18	Spin dependence of neutron proton scattering
	13-Jan-18	Effective range theory of n-p scattering
	14-Jan-18	Sunday
3	15-Jan-18	Coherent scattering of neutrons on ortho and para hydrogen
	16-Jan-18	Coherent scattering of neutrons on ortho and para hydrogen (continue)
	17-Jan-18	Magnetic moment of deuteron
	18-Jan-18	Importance of magnetic moment in the determination of exact ground state of deuteron (continue)
	19-Jan-18	Assignment
	20-Jan-18	Problem on above topics
	21-Jan-18	Sunday
4	22-Jan-18	Vasant Panchami
	23-Jan-18	Class Test for 1st unit
	24-Jan-18	Sir Chhotu Ram Jayanti
	25-Jan-18	**Unit II: Nuclear Reaction Theory:** Nuclear reactions
	26-Jan-18	Republic Day
	27-Jan-18	Cross sections
	28-Jan-18	Sunday
5	29-Jan-18	Resonance: Breit-Wigner formula
	30-Jan-18	Breit-Wigner dispersion formula for $l = 0$
	31-Jan-18	Breit-Wigner dispersion formula for all values of l

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Week	Date	Topics
1	1-Feb-18	Breit-Wigner dispersion formula for all values of l (Continue)
	2-Feb-18	The compound nucleus
	3-Feb-18	The compound nucleus (Continue)
	4-Feb-18	Sunday
2	5-Feb-18	Continuum theory of cross section
	6-Feb-18	Continuum theory of cross section (Continue)
	7-Feb-18	Statistical theory of nuclear reactions
	8-Feb-18	Statistical theory of nuclear reactions (Continue)
	9-Feb-18	Evaporation probability
	10-Feb-18	Maharshi Dayanand Saraswati Jayanti
	11-Feb-18	Sunday
3	12-Feb-18	cross sections for specific reactions
	13-Feb-18	Maha Shivratri
	14-Feb-18	cross sections for specific reactions (Continue)
	15-Feb-18	Kinematics of the stripping reactions
	16-Feb-18	Kinematics of the stripping reactions (Continue)
	17-Feb-18	Kinematics of the pick-up reactions
	18-Feb-18	Sunday
4	19-Feb-18	Kinematics of the pick-up reactions (Continue)
	20-Feb-18	Theory of stripping reactions
	21-Feb-18	Theory of stripping reactions (Continue)
	22-Feb-18	Theory of pick-up reactions
	23-Feb-18	Theory of pick-up reactions (Continue)
	24-Feb-18	Assignment
	25-Feb-18	Sunday
5	26-Feb-18	Problem on above topics
	27-Feb-18	Class Test for 2nd unit
	28-Feb-18	As per Uni. Calendar Holiday

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Week	Date	Topics
1	1-Mar-18	Guru Ravidas Birthday
	2-Mar-18	Holi
	3-Mar-18	As per Uni. Calendar Holiday
	4-Mar-18	Sunday
2	5-Mar-18	**Unit III: Nuclear Models-I:** Liquid drop model
	6-Mar-18	Liquid drop model (Continue)
	7-Mar-18	Similarity and dissimilarity between drop of liquid and nucleus
	8-Mar-18	Bohr and Wheeler theory of nuclear fission
	9-Mar-18	Outlines of Bohr and Wheeler theory of nuclear fission
	10-Mar-18	Merits and demerits of liquid drop model
	11-Mar-18	Sunday
3	12-Mar-18	Concept of magic numbers
	13-Mar-18	Concept of magic numbers (Continue)
	14-Mar-18	The properties of magic nucleus
	15-Mar-18	The properties of magic nucleus (Continue)
	16-Mar-18	Introduction to Nuclear Shell Model
	17-Mar-18	Nuclear Shell Model (Continue)
	18-Mar-18	Sunday
4	19-Mar-18	Predictions of shell closure on the basis of square well potential
	20-Mar-18	Need of introducing spin-orbit coupling to reproduce magic numbers
	21-Mar-18	Need of introducing spin-orbit coupling to reproduce magic numbers (Continue)
	22-Mar-18	Extreme single particle model
	23-Mar-18	Shaheedi Diwas of Bhagat Singh, Rajguru & Sukhdev
	24-Mar-18	Extreme single particle model and its predictions regarding ground state spin parity
	25-Mar-18	Sunday/ Ram Navami
5	26-Mar-18	magnetic moment
	27-Mar-18	electric quadrupole moments
	28-Mar-18	Assignment
	29-Mar-18	Mahavir Jayanti
	30-Mar-18	Problem on above topics
	31-Mar-18	Class Test for 3rd unit

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Week	Date	Topics
1	1-Apr-18	Sunday
	2-Apr-18	**Unit IV: Nuclear Models-II:** Nuclear surface deformations
	3-Apr-18	Nuclear surface deformations (Continue)
	4-Apr-18	General parameterization Types of multipole deformations
	5-Apr-18	General parameterization Types of multipole deformations (Continue)
	6-Apr-18	Quadrupole Deformations
	7-Apr-18	Symmetries in collective space
	8-Apr-18	Sunday
2	9-Apr-18	Surface vibrations Vibrations of a classical liquid drop
	10-Apr-18	Surface vibrations Vibrations of a classical liquid drop (Continue)
	11-Apr-18	The Harmonic quadrupole oscillator
	12-Apr-18	The Harmonic quadrupole oscillator (Continue)
	13-Apr-18	The collective angular momentum operator
	14-Apr-18	Dr AmbedkarJayanti / Vaisakhi
	15-Apr-18	Sunday
3	16-Apr-18	The collective quadrupole Operator
	17-Apr-18	Quadrupole vibrational spectrum
	18-Apr-18	ParashuramaJayanti
	19-Apr-18	Rotating nuclei
	20-Apr-18	The rigid rotor
	21-Apr-18	The symmetric rotor
	22-Apr-18	Sunday
4	23-Apr-18	The asymmetric rotor
	24-Apr-18	Assignment
	25-Apr-18	Problem on above topics
	26-Apr-18	Class Test for 4th unit
	27-Apr-18	Sessional test for: 1st and 2nd unit
	28-Apr-18	Sessional test for: 3rd and 4th unit