Government College Matanhail

Lesson Plan

Course: Physics in Everyday Life
Course Code: 24PHY401MI01
Semester–I
Session: 2025–26
Faculty: Dr. Devender Singh, Assistant Professor of Physics

Dates	Unit / Topics to be Covered
15.07.25 – 19.07.25	**Unit 1: Mechanics** – Introduction to Force, Weight
21.07.25 – 26.07.25	Work, Energy, Power
28.07.25 – 02.08.25	Centrifuge; Washing Machine mechanism
04.08.25 – 09.08.25	**Revision of Unit 1 + Class Test**
11.08.25 – 16.08.25	**Unit 2: Heat** – Variation of boiling point with pressure; Pressure Cooker
18.08.25 – 23.08.25	Cooling by Expansion; Refrigerator working
25.08.25 – 30.08.25	Air Conditioner; Bernoulli's Principle & Applications
01.09.25 – 06.09.25	Bunsen Burner; Aeroplane flight principles
08.09.25 – 13.09.25	**Revision of Unit 2 + Class Test**
15.09.25 – 20.09.25	**Unit 3: Sound & Optics** – Sound waves; Doppler Effect
22.09.25 – 27.09.25	Power of Lens; Long Sight & Short Sight
29.09.25 – 04.10.25	Microscope, Telescope
06.10.25 – 11.10.25	Binocular, Camera, Video Camera
13.10.25	**Revision of Unit 3**
14.10.25 – 22.10.25	**Diwali Vacations**
23.10.25 – 25.10.25	**Unit 4: Electrical Appliances** – Tube light & Fan
27.10.25 – 01.11.25	Kilowatt-hour, Fuse, Heating Elements
03.11.25 – 08.11.25	Microwave Oven; Electric Heater
10.11.25 – 15.11.25	Photoelectric Effect
17.11.25 – 18.11.25	**Revision of Unit 4 & Full Syllabus Review**

Dr. Devender Singh
Associate Prof. of Physics

Government College Matanhail

Lesson Plan

Course: Elements of Modern Physics
Course Code: 25PHY403MI01
Semester–III
Session: 2025–26
Faculty: Dr. Devender Singh, Assistant Professor of Physics

Dates	Unit / Topics to be Covered
15.07.25 – 19.07.25	Introduction: Scope of Modern Physics, Limitations of Classical Physics
21.07.25 – 26.07.25	Planck's Quantum Hypothesis, Blackbody Radiation
28.07.25 – 02.08.25	Concept of Photons, Photoelectric Effect
04.08.25 – 09.08.25	Applications of Photoelectric Effect (solar cells, photodiodes)
11.08.25 – 16.08.25	Compton Scattering – Qualitative Understanding
18.08.25 – 23.08.25	De Broglie Hypothesis, Matter Waves
25.08.25 – 30.08.25	Davisson–Germer Experiment: Verification of Matter Waves
01.09.25 – 06.09.25	Rutherford's Model: Atomic Instability, Discrete Spectra
08.09.25 – 13.09.25	Bohr's Model: Quantization Rule, Hydrogen-like Atoms (qualitative)
15.09.25 – 20.09.25	Wave-Particle Duality; Heisenberg's Uncertainty Principle (examples)
22.09.25 – 27.09.25	Energy-Time Uncertainty Principle; Applications
29.09.25 – 04.10.25	Two-Slit Experiment (Photons & Particles)
06.10.25 – 11.10.25	Schrödinger Equation: Introduction & Wave Function Interpretation
13.10.25	Probability Concepts in Quantum Mechanics (short week)
14.10.25 – 22.10.25	**Diwali Vacations**
23.10.25 – 25.10.25	One-Dimensional Infinite Potential Well – Energy Levels
27.10.25 – 01.11.25	Quantum Dots & Applications of Particle in a Box
03.11.25 – 08.11.25	Tunnelling Effect, Step Potential (qualitative), Applications
10.11.25 – 15.11.25	Nuclear Structure: Size, Atomic Weight, Binding Energy
17.11.25 – 18.11.25	Radioactivity: Laws of Decay, Half-life, α, β, γ Decays

Dr. Devender Singh
Associate Prof. of Physics

Government College Matanhail

Lesson Plan
Course: Optics
Course Code: 25PHY403DS01
Semester–III
Session: 2025–26
Faculty: Dr. Devender Singh, Assistant Professor of Physics

Dates	Unit / Topics to be Covered
15.07.25 – 19.07.25	Introduction to Wave Optics; **Interference**: Young's Double Slit Experiment; Coherence, Conditions of Interference
21.07.25 – 26.07.25	Fresnel's Biprism (Applications: Wavelength of Sodium Light, Thickness of Mica Sheet); Phase Change on Reflection
28.07.25 – 02.08.25	Interference by Division of Amplitude: Thin Films, Colours in Thin Films, Classification of Fringes
04.08.25 – 09.08.25	Wedge-shaped Film; Newton's Rings (Theory & Applications)
11.08.25 – 16.08.25	**Diffraction**: Fresnel Diffraction, Huygens-Fresnel Principle, Fresnel's Assumptions, Rectilinear Propagation
18.08.25 – 23.08.25	Diffraction at Straight Edge, Rectangular Slit & Circular Aperture
25.08.25 – 30.08.25	Fraunhoffer Diffraction: Single Slit (Intensity Distribution)
01.09.25 – 06.09.25	Double Slit Diffraction; Plane Transmission Grating Spectrum
08.09.25 – 13.09.25	Dispersive Power of Grating, Limit of Resolution, Rayleigh's Criterion
15.09.25 – 20.09.25	Resolving Power of Telescope & Grating; **Revision of Interference & Diffraction**
22.09.25 – 27.09.25	**Polarization**: Polarisation by Reflection, Refraction & Scattering; Malus Law
29.09.25 – 04.10.25	Double Refraction; Huygens's Theory (Normal & Oblique Incidence)
06.10.25 – 11.10.25	Nicol Prism; Quarter-wave Plate & Half-wave Plate
13.10.25	Production & Detection of Plane, Circularly & Elliptically Polarised Light (Quick Coverage before break)
14.10.25 – 22.10.25	Diwali Vacations
23.10.25 – 25.10.25	Optical Activity; Fresnel's Theory of Optical Rotation; Specific Rotation, Polarimeters (Half-shade & Biquartz)
27.10.25 – 01.11.25	**Lasers**: Absorption, Emission, Amplification, Population Inversion, Components of Lasers (Active Medium, Pumping, Optical Resonator); Properties of Laser Beam
03.11.25 – 08.11.25	Metastable State, Excitation Mechanism; Types of Lasers (He-Ne, Ruby); Applications of Lasers
10.11.25 – 15.11.25	**Fibre Optics**: Principle of Propagation, Acceptance Angle & Numerical Aperture; Types (Single-mode, Multimode), Advantages & Disadvantages
17.11.25 – 18.11.25	**Final Revision**

Dr. Devender Singh
Associate Prof. of Physics

Government College Matanhail

Lesson Plan

Course: Solid State Physics
Course Code: PHY501
Semester–V
Session: 2025–26
Faculty: Dr. Devender Singh, Assistant Professor of Physics

Dates	Unit / Topics to be Covered
15.07.25 – 19.07.25	Introduction: Crystalline and Glassy Forms, Liquid Crystals
21.07.25 – 26.07.25	Crystal Structure, Periodicity, Lattice and Basis
28.07.25 – 02.08.25	Crystal Translational Vectors and Axes, Unit Cell and Primitive Cell
04.08.25 – 09.08.25	Wigner–Seitz Primitive Cell, Symmetry Operations for a 2D Crystal
11.08.25 – 16.08.25	Bravais Lattices in Two Dimensions
18.08.25 – 23.08.25	Bravais Lattices in Three Dimensions
25.08.25 – 30.08.25	Crystal Planes and Miller Indices, Interplanar Spacing
01.09.25 – 06.09.25	Crystal Structures of ZnS and NaCl
08.09.25 – 13.09.25	Crystal Structure of Diamond
15.09.25 – 20.09.25	X-Ray Diffraction: Bragg's Law
22.09.25 – 27.09.25	Experimental X-Ray Diffraction Methods
29.09.25 – 04.10.25	K-Space and its Applications
06.10.25 – 11.10.25	Reciprocal Lattice: Physical Significance, Reciprocal Lattice Vectors
13.10.25	Reciprocal Lattice of Simple Cubic Lattice (Revision before break)
14.10.25 – 22.10.25	**Diwali Vacations**
23.10.25 – 25.10.25	Reciprocal Lattice of b.c.c. and f.c.c.
27.10.25 – 01.11.25	Specific Heat of Solids: Dulong–Petit Law, Limitations
03.11.25 – 08.11.25	Einstein's Theory of Specific Heat
10.11.25 – 15.11.25	Debye Model of Specific Heat of Solids
17.11.25 – 18.11.25	**Overall Revision & Problem Solving (All Units)**

Dr. Devender Singh
Associate Prof. of Physics

Lesson Plan Inorganic Chemistry B.Sc. III (Odd Semester) AY 2025-26
Mrs. Pinki Assistant Professor Chemistry

Dates	
28-02 Aug 2025	NMR Spectroscopy-I Principle of nuclear magnetic resonance, the PMR spectrum, number of signals, peak areas,.
04-09 Aug 2025	Equivalent and nonequivalent protons positions of signals and chemical shift, shielding and deshielding of protons
11-16 Aug 2025	proton counting, splitting of signals and coupling constants, magnetic equivalence of protons
18-23 Aug 2025	NMR Spectroscopy-II Discuss ion of PMR spectra of the molecules: ethyl bromide, npropyl bromide, isopropyl bromide, 1,1-dibromoethane, 1,1,2-tribromoethane, ethanol, acetaldehyde, ethyl acetate, toluene
25-30 Aug 2025	Benzaldehyde and acetophenone. Simple problems on PMR spectroscopy for structure determination of organic compounds
01-06 Sept 2025	**Revision and Test I**
08-13 Sept 2025	Carbohydrates-I Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses.
15-20 Sept 2025	Configuration of monosaccharides. Erythro and threo diastereomers. Conversion of glucose in to mannose. Formation of glycosides, ethers and esters.
22-27 Sept 2025	Determination of ring size of glucose and fructose. Open chain and cyclic structure of D(+)-glucose & D(-) fructose. Mechanism ofmutarotation. Structures of ribose and deoxyribose
29 Sept- 04 Oct 2025	Carbohydrates-II An introduction to disaccharides (maltose, sucrose and lactose)
06-13 Oct 2025	polysaccharides (starch and cellulose) without involving structure determination
14-22 Oct 2025	**DIWALI BREAK**
23-25 Oct 2025	Organometallic Compounds Organo magnesium compounds: the Grignard reagents-formation structure and chemical reactions.
27 Oct -01 Nov 2025	Organozinc compounds: formation and chemical reactions.
03-08 Nov 2025	Organolithium compounds: formation and chemical reactions.
10-15 Nov 2025	**Doubts, Assignments**
17 & 18 Nov 2025	**Revision and Test II**

Government College Matanhail

Lesson Plan

Course: Mechanics and Theory of Relativity
Course Code: 24PHY401DS01
Program: B.Sc. (Physical Sciences), Semester–I
Session: 2025–26
Faculty: Dr. Manjeet Singh, Assistant Professor of Physics

Dates	Unit / Topics to be Covered
15.07.25 – 19.07.25	Introduction to Mechanics. Mechanics of single particle and system of particles.
21.07.25 – 26.07.25	Conservation laws: Linear momentum, Angular momentum, Mechanical energy (particle & system).
28.07.25 – 02.08.25	Centre of Mass, equation of motion, Constrained Motion.
04.08.25 – 09.08.25	Work-Energy theorem. Conservative and non-conservative forces.
11.08.25 – 16.08.25	Potential energy, Energy diagram, Stable/unstable equilibrium. Elastic potential energy.
18.08.25 – 23.08.25	Force as gradient of potential energy, Work & Potential energy, Work by non-conservative forces. Conservation of Energy.
25.08.25 – 30.08.25	**Unit 2 begins**: Degrees of freedom, Generalized coordinates, Transformation equations.
01.09.25 – 06.09.25	Generalized displacement, velocity, acceleration, momentum, force & potential. Cylindrical & spherical coordinates.
08.09.25 – 13.09.25	Hamilton's principle, Derivation of Lagrange's equation of motion.
15.09.25 – 20.09.25	Applications: Linear Harmonic oscillator, Simple Pendulum.
22.09.25 – 27.09.25	Atwood's Machine. Problem-solving session on Unit 2.
29.09.25 – 04.10.25	**Unit 3 begins**: Rotational Dynamics: Rotation of rigid body, Torque, Angular momentum, KE of rotation.
06.10.25 – 11.10.25	Theorems of perpendicular and parallel axes with proof. MOI: sphere, shell, solid/hollow cylinder, bar.
13.10.25	Acceleration of rolling body on inclined plane. KE of rolling.
14.10.25 – 22.10.25	**Diwali Vacations**
23.10.25 – 25.10.25	Motion involving translation + rotation. Problem solving (Unit 3).
27.10.25 – 01.11.25	**Unit 4 begins**: Non-inertial frames, Fictitious forces, Uniformly rotating frame.
03.11.25 – 08.11.25	Centrifugal & Coriolis forces (applications). Michelson–Morley experiment & outcome.
10.11.25 – 15.11.25	Postulates of STR. Lorentz transformations. Simultaneity, Lorentz contraction, Time dilation.
17.11.25 – 18.11.25	Relativistic velocity, frequency, wavenumber, velocity addition. Mass variation, massless particles.
Extra / Revision	Mass-energy equivalence. Relativistic Doppler effect. Energy-momentum four vector. Problem solving & **Revision of full syllabus**.

Manjeet Singh 20/08/2025
DR. MANJEET SINGH
Asst. Prof. of Physics

Government College Matanhail

Lesson Plan

Course: Electrical Circuit & Instrumentation Skills
Course Code: 24PHY401SE01
Semester–I
Session: 2025–26
Faculty: Dr. Manjeet Singh, Assistant Professor of Physics

Dates	Unit / Topics to be Covered
15.07.25 – 19.07.25	**Unit 1:** Basic electricity principles – Voltage, Current, Resistance & Power
21.07.25 – 26.07.25	Ohm's law; Series, parallel & series-parallel combinations
28.07.25 – 02.08.25	AC & DC electricity; familiarization with multimeter, voltmeter & ammeter
04.08.25 – 09.08.25	Multimeter – principle of measurement (dc/ac voltage, current & resistance); specifications & significance
11.08.25 – 16.08.25	Electronic voltmeter – principle, block diagram; specifications
18.08.25 – 23.08.25	AC millivoltmeter – types, block diagram, specifications & significance
25.08.25 – 30.08.25	**Unit 2:** Block diagram of basic CRO; construction of CRT; electron gun, focusing & acceleration
01.09.25 – 06.09.25	CRO screen phosphor, visual persistence, chemical composition; time base operation, synchronization
08.09.25 – 13.09.25	CRO front panel controls; specifications & their significance
15.09.25 – 20.09.25	Measurement using CRO – dc/ac voltage, frequency, time period; dual trace & digital oscilloscope
22.09.25 – 27.09.25	Digital storage oscilloscope – block diagram & principle
29.09.25 – 04.10.25	**Unit 3:** Digital instruments – principle & working; analog vs digital instruments; characteristics
06.10.25 – 11.10.25	Digital voltmeter – working principle; digital multimeter – block diagram & working
13.10.25	Universal/frequency counter – time interval, frequency & period measurement, time-base stability
14.10.25 – 22.10.25	**Diwali Vacation**
3.10.25 – 25.10.25	**Unit 4:** Solid state devices – resistors, inductors, capacitors; diode & rectifiers
27.10.25 – 01.11.25	Series/shunt components; response of L & C with DC/AC sources
03.11.25 – 08.11.25	Generators & transformers – dc power sources, ac/dc generators, inductance, capacitance, impedance
10.11.25 – 15.11.25	Operation of transformers; electric motors – single-phase, three-phase, dc motors, design basics
17.11.25 – 18.11.25	Interfacing AC/DC sources to control heaters & motors; speed & power of AC motors

Manjeet Singh 20/08/2025
DR. MANJEET SINGH
Asst. Prof. of Physics

Government College Matanhail

Lesson Plan

Program: B.Sc. (Physical Sciences)
Course: Workshop Skills in Physics
Course Code: 25PHY403SE01
Semester–III
Session: 2025–26
Faculty: Dr. Manjeet Singh, Assistant Professor of Physics

Dates	Unit & Topics
15.07.25 – 19.07.25	**Unit 1:** Introduction, Measuring units, conversion to SI & CGS
21.07.25 – 26.07.25	Familiarization with meter scale, Vernier caliper, Screw gauge
28.07.25 – 02.08.25	Measurement of dimensions: solid block, cylindrical beaker, thin wire, sheet thickness
04.08.25 – 09.08.25	Use of Sextant to measure height of buildings, mountains etc.
11.08.25 – 16.08.25	**Unit 2:** Electrical & electronic skill – use of Multimeter
18.08.25 – 23.08.25	Soldering of electrical circuits with R, L, C, diode, ICs on PCB
25.08.25 – 30.08.25	Network theorems – Superposition theorem
01.09.25 – 06.09.25	Thevenin's theorem, Norton's theorem
08.09.25 – 13.09.25	Maximum Power Transfer Theorem
15.09.25 – 20.09.25	**Unit 3:** Basics of Power Supplies; AC Power Supplies – characteristics, use in circuits
22.09.25 – 27.09.25	DC Power Supplies: fixed vs variable; components – transformers, rectifiers
29.09.25 – 04.10.25	Half-wave & full-wave rectifiers; filters & regulators
06.10.25 – 11.10.25	Voltage regulation, ripple reduction; use of capacitors, Zener diodes, IC regulators (LM317)
13.10.25	Revision of Unit 1–3
14.10.25 – 22.10.25	**Diwali Vacation**
23.10.25 – 25.10.25	**Unit 4:** Introduction to C.R.O.; structure, working; electron gun, deflection system, phosphor screen
27.10.25 – 01.11.25	Block diagram of CRO; functions of components; controls – time base, volts/div, focus, intensity, trigger
03.11.25 – 08.11.25	Probes & ground reference; applications of CRO – measurement of voltage, frequency, phase difference
10.11.25 – 15.11.25	Observation of sine, square, triangular waveforms; troubleshooting circuits using CRO
17.11.25 – 18.11.25	**Revision & problem solving (Unit 1–4)**

Manjeet Singh 20/08/2025

DR. MANJEET SINGH
Asst. Prof. of Physics

Government College Matanhail

Lesson Plan

Program: B.Sc. (Pass Course)
Course: Quantum Mechanics
Course Code: PHY 502
Semester–V
Session: 2025–26
Faculty: Dr. Manjeet Singh, Assistant Professor of Physics

Dates	Unit & Topics
15.07.25 – 19.07.25	**Unit I:** Failure of Classical E.M. Theory; Old Quantum Theory, Photon concept
21.07.25 – 26.07.25	Photoelectric effect; Einstein's photoelectric equation
28.07.25 – 02.08.25	Compton effect – theory & result
04.08.25 – 09.08.25	Inadequacy of old quantum theory; de-Broglie hypothesis
11.08.25 – 16.08.25	Davisson-Germer & G.P. Thomson experiments
18.08.25 – 23.08.25	Phase velocity & group velocity
25.08.25 – 30.08.25	Heisenberg's Uncertainty Principle (position-momentum, energy-time, angular momentum)
01.09.25 – 06.09.25	Applications of Uncertainty principle: Gamma-ray microscope, electron diffraction from a slit
08.09.25 – 13.09.25	**Revision of Unit I**
15.09.25 – 20.09.25	**Unit II:** Derivation of Time-dependent Schrödinger equation
22.09.25 – 27.09.25	Eigen values, eigen functions, wave function significance
29.09.25 – 04.10.25	Normalization of wave function, concept of observable & operator
06.10.25 – 11.10.25	Schrödinger equation for Harmonic oscillator – ground state
13.10.25	Harmonic oscillator – excited states
14.10.25 – 22.10.25	**Diwali Vacation**
23.10.25 – 25.10.25	**Unit III:** Free particle in 1D box – solution, eigen functions, eigen values, quantization
27.10.25 – 01.11.25	Particle in a box – momentum, nodes, antinodes, zero-point energy
03.11.25 – 08.11.25	1D potential barrier ($E > V_0$) – Reflection & Transmission coefficients
10.11.25 – 15.11.25	Potential barrier ($E < V_0$) – Penetration coefficient, tunneling, penetration depth
17.11.25 – 18.11.25	**Revision of Unit II–III & Problem Solving**

Manjeet Singh 20/08/2025

DR. MANJEET SINGH
Asst. Prof. of Physics

Government college Matanhail

Lesson Plan

Couse :- Discipline Specific

Couse code :- 24CHEM401DS01

Programm :- (B.Sc Physical + Life Sciences) Semester-1

Session :- 2025-2026

Faculty :- Pinki RANI Assistant Prof. chemistry + Dr. Soman

Dates	Unit / Topics to be covered
15.07.25-19.07.25	chemical Bonding and Molecular Structure Introduction, Ionic Bond Laltic energy, Born-Haber cycle Critical Temp, Pressure, Volume. Compressibility factor
21.07.25-26.07.25	Born-Haber cycle & its application Fajan's rules, hydration energy, Bond moment, dipole moment and % Ionic character. Maxwell's distribution of velocities and their Calculation.
28.07.25-02.08.25	Resonance and resoance Energy & condition, Examples of Resonance. study of some Inorganic & organic compound. collision diameter, collision Number.
04.08.25-09.08.25	Introduction of MOT Molecular orbitial Approach. LACO Method Revision of Resonance & energy its compound. Vander waal's equation of state.
11.08.25-16.08.25	LACO Method, Bonding and anti-Bonding MOs and their characteristics for S-S, S-P and P-P Combition of AO.

Government college Matanhail

Dates	Unit / Topics to be covered.
18.08.25 - 16.08.25	Non-Bonding and antibonding combination of orbital, MO treatment of homonuclear diatomic molecules of Ist & 2nd periods. heteronuclear diatomic molecules such O_2^-, O_2^{2-}. Calculation of Bayle's Temperature
25.08.25 - 30.08.25	treatment of heteronuclear diatomic molecules N_2^-, CO, NO^+, CN^- comparison of VBT and MO Approach. Collision frequency and Mean free path.
01.09.25 - 06.09.25	Unit-2 / P-Block Elements:- Introduction oxides:- Structures of oxides of N, P and relative acid strength of oxyacids of nitrogen and Phosphorous. vanderwaal's equation for Real gases.
08.09.25 - 13.09.25	Structure of white, Yellow and red phosphorus oxyacids of Sulphur- Structure and acidic strength. H_2O_2 structure, properties and uses.
15.09.25 - 20.09.25	Basic properties of halogen, interhalogen compounds, types and properties, halogen acids and oxyacids of Cl. Structure and comparison of acidic strength.
22.09.25 - 27.09.25	Revision of P-Block Element &

29.09.25 - 04.10.25	Acids and Bases:- Bronsted - Lowery concept, conjugate acids and bases. relative strength of acids and bases.
06.10.25 - 11.1025	Effect of Substituent and solvent differentiating and levelling Solvent Lewis acid - Base comp concept classification of Lewis Acids Bases Lux - Flood Concept.
13.10.25	Lux - Flood Concept / Revision
14.10.25 - 22.10.25	'Diwali Vacations'
23.10.25 - 25.10.25	Unit - IV Basics of organic chemistry and stereochemistry- Electronic displacements and its application.
27.10.25 - 01.11.25	Rxn Intermediates and concept of aromaticity, concept of isomerism types of isomerism
03.11.25 - 08.11.25	optical isomerism, optical activity elements of symmetry, molecular chirality, enantiomers, stereogenic centre, properties of enantiomers.

Dates	Unit/ Topice to be covered
10.11.25 - 15.11.25	Elements of Symmetry, molecular chiality, enantiomers, stereogenic centre, properties of enantiomers chiral/ Achiral molecules with two sterogenic centres.
17.11.25 - 18.11.25	Diastereomers, thero & erythro, meso compound, resolution of Enantiomers, Inversion, retention and racemization, relative and absolute configuation, sequence rules R & S system.

Puwa Row

Puwa Row

Assistant Prof. Chemistry

3/1/2025

Government college Matanhail

Lesson Plan

Course :- Discipline Specific

Coursecode :- 24CHEM403DS01

Programm :- Physical + Life Sciences -III

Session :- 2025-2026

Faculty :- Puja Rani, Assistant Prof. of chemistry + Dr Suman

Dates	Unit / Topics to be covered
28.07.25-02.08.25	General characteristics of Transition metal, Brief Discussion of difference b/w Ist IInd transition series Thud Law of Thermodynamic, Nelest Heat Theorm.
04.08.25-09.08.25	oxidation states, magnetic and spectral properties. Gibb's Helmholtz Equation A & G Crieteria of spontanity.
11.08.25-16.08.25	Binary compounds and complexes illustrating relative stability of their oxidation states Partial Molar quantities.
18.08.25-23.08.25	Chemistry of Ti, V, Cr, Mn, Fe, Co, Mo, & W in various oxidation States. Arhenius Theory, ostwald dilution Law.
25.08.25-30.08.25	Some Important Compound as Laboratory reagents Potassium dichromate, Potassium Permaganate Pot. ferrocyanide, sodium nitroprusside

Dates	Topic
01.09.25 - 06.09.25	Sodium cobaltinitrite, Revision of Unit I, test: Transbt No. Hitoff Method.
08.09.25 - 13.09.25	Unit / IV Topic to be covered Alkyl Halides:- Nomenclature and classes of Alkyl Halides, General method of Preparation
15.09.25 - 20.09.25	Mechanism of SN1, SN2, E1 and E2, E1cb. Electrolytic condensation, its Application.
22.09.25 - 27.09.25	Stereochemistry of Nucleophilic Substitution rxn of Alkyl Halides. Buffer sol., Buffer Action.
29.09.25 - 04.10.25	Energy Profile Diagram Elimination vs Substitution rxn, Henderson Equation
06.10.25 - 13.10.25	Revision / Test of Alkyl Halides. Aryl Halides Nomenclature & classes of Alkyl Halides.
14.10.25 - 22.10.25	Diwali Vacations

Dates	Topic
23.10.25 - 25.10.25	Buffer Mechanism of Buffer Action. Method of preparation of Aryl Halides, ANS rxn.
27.10.25 - 01.11.25	Metal - Metal ion. Gas Electrode. Effect of ANS & their Reactivity.
03.11.25 - 08.11.25	Metal - Metal Insoluble salt anion Electrode Benzyne Mechanism
10.11.25 - 15.11.25	Redox Electrode. Reactivity & relative Strength of C-Halogen Bond in alkyl allyl Benzyl Vinyl & aryl Halids

Puvi Rani

Puvi Rani
Assistant Prof. chemistry

Lesson Plan Inorganic Chemistry B.Sc. III (Odd Semester) AY 2025-26
Dr. Suman Bhatti and Mrs. Pinki Assistant Professor Chemistry

Dates	
28-02 Aug 2025	Metal-ligand Bonding in Transition Metal Complexes Limitations of valence bond theory,
04-09 Aug 2025	An elementary idea of crystal-field theory, crystal field splitting in octahedral
11-16 Aug 2025	Crystal field split tetrahedral and square planar complexes, factors affecting the crystal-field parameters
18-23 Aug 2025	Thermodynamic and Kinetic Aspects of Metal Complexes
25-30 Aug 2025	A brief outline of thermodynamic stability of metal complexes and factors affecting the stability
01-06 Sept 2025	substitution reactions of square planar complexes of Pt(II)
08-13 Sept 2025	**Revision and Test I**
15-20 Sept 2025	Magnetic Properties of Transition Metal Complexes
22-27 Sept 2025	Methods of determining magnetic susceptibility, spin-only formula.
29 Sept- 04 Oct 2025	L-S coupling, correlation of s and eff values, orbital contribution to magnetic moments, application of magnetic moment data for 3dmetal complexes.
06-13 Oct 2025	Electron Spectra of Transition Metal Complexes Types of electronic transitions
14-22 Oct 2025	**DIWALI BREAK**
23-25 Oct 2025	Selection rules for d-d transitions, spectroscopic ground states, spectrochemical series.
27 Oct -01 Nov 2025	Orgel-energy level diagram for d1 and d9 states,
03-08 Nov 2025	Discussion of the electronic spectrum of $[Ti(H_2O)_6]^{3+}$ complex ion
10-15 Nov 2025	**Revision of Electron Spectra , Doubts**
17 & 18 Nov 2025	**Revision and Test II**

Lesson Plan Physical Chemistry B.Sc. III (Odd Semester) AY 2025-26
Dr Suman Bhatti Assistant Professor Chemistry

Dates	
05-09 Aug 2025	Spectroscopy-I Introduction: Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statement of Born Oppenheimer approximation, Degrees of freedom.
11-16 Aug 2025	Rotational Spectrum Diatomic molecules. Energy levels of rigid rotator (semi-classical principles), selection rules,
18-23 Aug 2025	spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), determination of bond length, Qualitative description of non-rigid rotor, isotope effect..
25-30 Aug 2025	Vibrational spectrum Infrared spectrum: Energy levels of simple harmonic oscillator
01-06 Sept 2025	selection rules, pure vibrational spectrum, intensity, determination of force constant and qualitative relation of force constant and bond energies
08-13 Sept 2025	effects of anharmonic motion and isotopic effect on the spectra., idea of vibrational frequencies of different functional groups.
15-20 Sept 2025	Raman Spectrum: Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic molecules, selectin rules, Quantum theory of Raman spectra
22-27 Sept 2025	**Revision and Test I**
29 Sept- 04 Oct 2025	Quantum Mechanic s-Black-body radiation, Plank's radiation law, photoelectric effect
06-13 Oct 2025	heat capacity of solids, Compton effect, wave function and its significance of Postulates of quantum mechanics, quantum mechanical operator, commutatión relations, Hamiltonian operator
14-22 Oct 2025	**DIWALI BREAK**
23-25 Oct 2025	Hermitian operator, average value of square of Hermitian as a positive quantity, Role of operators in quantum mechanics, To show quantum mechanically that position and momentum cannot be predicated simultaneously
27 Oct -01 Nov 2025	Determination of wave function & energy of a particle in one dimensional box, Pictorial representation and its significance
03-08 Nov 2025	Physical Properties and Molecular Structure Optical activity, Polarization – (clausius – Mossotti equation). Orientation of dipoles in an electric field, dipole moment
10-15 Nov 2025	Structure of molecules, Magnetic permeability, magnetic susceptibility and its determination. Application of magnetic susceptibility, magnetic properties – Para magnetism, diamagnetism and ferromagnetic.
17 & 18 Nov 2025	**Revision and Test II**

Bhatti

Ruki Rani

Lesson Plan Inorganic Chemistry B.Sc. III (Odd Semester) AY 2025-26
Dr. Suman Bhatti and Mrs. Pinki Assistant Professor Chemistry

Dates	
28-02 Aug 2025	Metal-ligand Bonding in Transition Metal Complexes Limitations of valence bond theory,
04-09 Aug 2025	An elementary idea of crystal-field theory, crystal field splitting in octahedral
11-16 Aug 2025	Crystal field split tetrahedral and square planar complexes, factors affecting the crystal-field parameters
18-23 Aug 2025	Thermodynamic and Kinetic Aspects of Metal Complexes
25-30 Aug 2025	A brief outline of thermodynamic stability of metal complexes and factors affecting the stability
01-06 Sept 2025	substitution reactions of square planar complexes of Pt(II)
08-13 Sept 2025	**Revision and Test I**
15-20 Sept 2025	Magnetic Properties of Transition Metal Complexes
22-27 Sept 2025	Methods of determining magnetic susceptibility, spin-only formula.
29 Sept- 04 Oct 2025	L-S coupling, correlation of s and eff values, orbital contribution to magnetic moments, application of magnetic moment data for 3dmetal complexes.
06-13 Oct 2025	Electron Spectra of Transition Metal Complexes Types of electronic transitions
14-22 Oct 2025	**DIWALI BREAK**
23-25 Oct 2025	Selection rules for d-d transitions, spectroscopic ground states, spectrochemical series.
27 Oct -01 Nov 2025	Orgel-energy level diagram for d1 and d9 states,
03-08 Nov 2025	Discussion of the electronic spectrum of [Ti(H2O)6]3+ complex ion
10-15 Nov 2025	**Revision of Electron Spectra , Doubts**
17 & 18 Nov 2025	**Revision and Test II**

Lesson Plan
(2025-2026)

B.Sc/B.A (5th sem.) (Group & Rings)

Name & Designation:- Ms. Diksha, Assistant Professor of Mathematics

28 July - 02 Aug. Definition & properties of Group with examples, Subgp. & its criteria.

04 Aug. - 09 Aug. Cyclic groups, Cosets, Index of subgroup coset decomp.

11 Aug. - 16 Aug. Lagrage's th^m & its consequences, Normal Subgp.

18 Aug. - 23 Aug. Quotient groups, Revision & discussion of Unit-I

25 Aug. - 30 Aug. Homomorphism, isomorphism, inner auto. of a group.

01 Sept. - 06 Sept. Auto. of cyclic groups, Permutation gp, even & odd permutations.

08 Sept - 13 Sept. Alternating groups, Caley's th^m, Centre of gp & derived gp

15 Sept. - 20 sept. Introduction of rings, subrings, integral domains & fields, Assisment & problem discussion.

22 Sept - 27 Sept. Charactstics of Ring, Ring homomorphism, ideals

29 Sept - 04 Oct. Field of quotients of Integral domains, revision & Class test.

06 Oct. - 13 Oct. Euclidean rings, Poly. rings, Poly. over rational fields

23 Oct. - 31 Oct. The Eisenstein's Criterion, Poly. rings over commutative rings

01 Nov. - 08 Nov. Unique factorization domain & R unique factorization domain $\Rightarrow R[x_1, x_2 - x_n]$.

10 Nov. - 18 Nov. Revision of all unit, test & assisments.

Lesson Plan (2025-2026)

B.Sc./B.A 5th Semester (Real Analysis)

Name & Designation – Ms. Diksha, Assistant Professor of Mathematics

28 July – 02 Aug.	Basics of integral functions & Reimann integral
04 Aug. – 09 Aug.	Integrability of continuous & monot. funct. & Fundamatd theorem of integral calculus.
11 Aug. – 16 Aug.	Mean value Theorems, Revision & discussion of Unit-I.
18 Aug. – 23 Aug.	Improper integral & their convergence, Comparison tests
25 Aug – 30 Aug.	Abel's & Dirchlet's tests, Frullani's integral & integral as a funct. of parameter
25 Aug – 30 Aug.	Continuity, Diff. & integrablity of integral funct.
01 Sept. – 06 Sept.	Definition & examples of metric space, problems of excercises discussion & assignments.
08 Sept. – 13 Sept.	neighbourhoods, limit points, interior points open & closed sets, closures & boundary point in metric space.
15 Sept. – 20 Sept.	subspace, equivalut metrics, Cauchy Seq., Cantor's intersection theorem
22 Sept. – 27 Sept.	Baire's Lategory thm & Contraction Principle
29 Sept. – 04 Oct.	Revision of Unit-II & Unit-III, class tests.
06 Oct. – 13 Oct.	Continuity, uniform cont. & Compactnes for metric spaces.
23 Oct. – 31 Oct.	Seq. Compact, Bolzano-Weierstrass propety, finite intersection propety, cont. with compactnes
01 Nov. – 08 Nov.	Connectedness, components, cont. with connectedness
10 Nov. – 18 Nov.	Revision of all Units, assignments & tests.

Diksha

Lesson Plan (2025-2026)

B.Sc./B.A 5th Sem. (Numerical Analysis)

Name with Designation :- Ms. Diksha, Assistant Professor of Mathematics

28 July - 02 Aug. Finite operators & their relations, missing terms & effect of error in difference tabular values

04 Aug. - 09 Aug. Newton's forward & backward interpolation formulae for equal intervals

11 Aug - 16 Aug. Newton's divided diff. & Lagrange's interpolation formulae for unequal intervals & Hemite formula for the same.

18 Aug. - 23 Aug. Central differces interpolation formulae & Revision, discussion of Unit-I

25 Aug - 30 Aug. Probability distribution of random variables, Binomial distribution

01 Sept - 06 Sept Possion's distribution, Normal distribution, assignments & problem discussion.

08 Sept. - 13 Sept. Numerical Differentiation of interpolation formulae.

15 Sept. - 20 Sept. Eigen value Problems: Power method, Jacobi's method

22 Sept - 27 Sept. House-Holder's, QR & Lanczos methods for eigen value problems.

29 Sept. - 04 Oct. Revision of Unit - II & III & Class test, Assignment.

06 Oct. 13 Oct. Numerical integration with Quadrature formula, Trapezoidal, Simpson's one-third & three-eight rule & Chebychev, Gauss Quadrature formulae.

23 Oct. - 31 Oct. Soln of ODE's with single step methods - Picard's, Taylor's series, Euler's Method.

01 Nov. - 09 Nov. Runge-Kutta, Mult. step, Predictor-corrector, Milne Simpson's methods for soln of ODE's.

10 Nov - 18 Nov. Discussion & revision of all units, tests.

Diksha

Lesson Plan (2025-2026)

B.Sc (M) 1st Sem. (Introductory Mathematics)

Name with Designation :- Ms. Diksha, Assistant Professor of Mathematics

16 July - 30 July. Numbers, HCF & LCM, Decimal & fractions

01 Aug. - 09 Aug. Square roots & cube roots

11 Aug. - 16 Aug. Surds & indices & Group discussion / Debate.

18 Aug. - 23 Aug. Problems on numbers & Book review, Seminar.

25 Aug. - 30 Aug. Average, Percentage & Group discussion & Assignments

01 Sept. - 06 Sept. Profit & Loss, test & Revision

08 Sept - 13 Sept. Ratio & proportion & Quiz / Debate.

15 Sept. - 20 Sept. Problems on ages, assignment.

22 Sept - 27 Sept. Time & work, Time & distance

29 Oct. - 04 Oct. Book review, Group discussion of ~~etc~~ unit II, III & revision.

06 Oct - 13 Oct. Problems on trains & test.

23 Oct. - 31 Oct. Mixture problem & Debate / Seminar

01 Nov. - 08 Nov. problems based on Calendar & Clock.

10 Nov. - 18 Nov. Revision of all units, Quizzes / Group discussion.

Lesson Plan

Academic Session July-November (2025-26)

Class - B.Sc. / B.A. IIIrd Sem (O.D.E.)

28 July - 15 August	Basic of O.D.E., types, Solution first order, first degree ODE Solution of $Mdx + Ndy = 0$
16 Aug. - 30 Aug.	Singular Sol. of Non Linear ODE Sol. of Linear diff. Equation
1 Sep - 15 Sep.	Linear diff. equation, Homogenous diff. equation
16 Sep - 30 Sep	Second order Non-Linear ODE Solution
1 Oct - 15 Oct	Simultenous diff. equation
16 Oct - 30 Oct	Revision Ist & IInd Unit
1 Nov - 16 Nov	Revision of IInd & IIIrd Unit

Balram
Assistant Professor of Mathematics

Lesson Plan

Academic Session July – November (2025-26)

Class → B.Sc. / B.A. Ist Sem (Functions of Algebra)

16 – 31st July	Matrix basic concepts, types of Matrix Properties, Inverse
1 – 15 August	Row, Colum echlon form, finding Inverse using echlon form PAO form
16 – 30 August	Solouation of systems of Equations
1 – 15 September	mapping, different types of mapping Properties, Problems on that
16 – 30 September	Solouation of Algebric and tran. equation
1 – 15 Oct.	Solouation of cubic and biquadratic equations
15 – 30 Oct	Revision of IIIrd & IVth Unit
1 – 16 Nov	Revision of Ist & IInd Unit

Balram
Assistant Professor of Mathematics