



**Aggarwal College Ballabgarh**

**LESSON PLAN**  
**17 WEEKS (JAN-APRIL)-2025**

**Name of Faculty: Dr. Jyoti Yadav**  
**Designation/ Department: Assistant Professor/Chemistry**

<b>CLASS: B.Sc. (Hons.) Chemistry</b>	<b>SEMESTER: 4th</b>	<b>SECTION: A</b>
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**SUBJECT: Inorganic Chemistry Theory**

<b>Week</b>		
<b>1</b>	<b>12-1-2025</b>	<b>S. U. N. D. A. Y.</b>
	<b>13-1-2025</b>	General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties and stereochemistry
	<b>19-1-2025</b>	<b>S. U. N. D. A. Y.</b>
	<b>20-1-2025</b>	General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties and stereochemistry
<b>2</b>	<b>26-1-2025</b>	<b>REPUBLIC DAY /S. U. N. D. A. Y.</b>
	<b>27-1-2025</b>	General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties and stereochemistry
	<b>2-2-2025</b>	<b>S. U. N. D. A. Y/BASANT PANCHAMI</b>
	<b>3-2-2025</b>	General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties and stereochemistry
	<b>9-2-2025</b>	<b>S. U. N. D. A. Y</b>
<b>3</b>	<b>10-2-2025</b>	General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties and stereochemistry
	<b>12-2-2025</b>	<b>HOLIDAY: GURU RAVIDAS JAYANTI</b>
	<b>16-2-2025</b>	<b>S. U. N. D. A. Y.</b>
	<b>17-2-2025</b>	Chemistry of Mo and W in different oxidation states,.
	<b>23-2-2025</b>	<b>S. U. N. D. A. Y.</b>

	24-2-2025	Chemistry of Mo and W in different oxidation states,.
	26-2-2025	<b>HOLIDAY: MAHA SHIVRATRI</b>
4	2-3-2025	<b>S. U. N. D. A. Y.</b>
	3-3-2025	Chemistry of Mo and W in different oxidation states,.
	9-3-2025	<b>S. U. N. D. A. Y.</b>
	10-3-2025	Chemistry of Mo and W in different oxidation states,.
	16-03-2025	<b>S. U. N. D. A. Y.</b>
	17-3-2025	<b>Remedial Class</b>
5	23-3-2025	<b>S. U. N. D. A. Y.</b>
	24-3-2025	Test
	30-3-2025	<b>S. U. N. D. A. Y.</b>
	31-3-2025	<b>HOLIDAY: ID-UL-FITR</b>
	6-4-2025	<b>S. U. N. D. A. Y.</b>
	7-4-2025	<b>Presentation</b>
	10-4-2025	<b>HOLIDAY: MAHAVIR JAYANTI</b>
6	13-4-2025	<b>S. U. N. D. A. Y.</b>
	14-4-2025	<b>HOLIDAY: AMBEDKAR JAYANTI</b>
	20-4-2025	<b>S. U. N. D. A. Y.</b>
	21-4-2025	<b>Presentation</b>
	27-4-2025	<b>S. U. N. D. A. Y.</b>
	28-4-2025	<b>Inorganic Chemistry Assignment</b>
	30-4-2025	<b>HOLIDAY: AKSHAY TRITYA</b>
7	04-05-2025	<b>S. U. N. D. A. Y.</b>





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**LESSON PLAN**  
**17 WEEKS (JAN-APRIL)-2025**

**Name of Faculty: Dr. Jyoti Yadav**  
**Designation/ Department: Assistant Professor/Chemistry**

<b>CLASS: B.Sc. NM</b>	<b>SEMESTER: 4th</b>	<b>SECTION: A</b>
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**SUBJECT: Organic Chemistry Theory II**

<b>Week</b>		
	<b>12-1-2025</b>	<b>S. U. N. D. A. Y.</b>
	<b>13-1-2025</b>	Molecular vibrations, Hooke's law, selection rules intensity and position of IR bands, measurement of IR spectrum
	<b>14-1-2025</b>	fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds.
	<b>19-1-2025</b>	<b>S. U. N. D. A. Y.</b>
	<b>20-1-2025</b>	Applications of IR spectroscopy in structure elucidation of simple organic compounds
<b>2</b>	<b>21-1-2025</b>	Remedial Class
	<b>26-1-2025</b>	<b>REPUBLIC DAY /S. U. N. D. A. Y.</b>
	<b>27-1-2025</b>	Test
	<b>28-1-2025</b>	Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines
	<b>1-2-2025</b>	Structural features affecting basicity of amines.
	<b>2-2-2025</b>	<b>S. U. N. D. A. Y/BASANT PANCHAMI</b>
	<b>3-2-2025</b>	Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds).

3	4-2-2025	Gabrielphthalimide reaction, Hofmann bromamide reaction
	9-2-2025	<b>S. U. N. D. A. Y</b>
	10-2-2025	electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.
	11-2-2025	Remedial Class
	12-2-2025	<b>HOLIDAY: GURU RAVIDAS JAYANTI</b>
	16-2-2025	<b>S. U. N. D. A. Y.</b>
	17-2-2025	Test
4	18-2-2025	Mechanism of diazotisation, structure of benzene diazonium chloride,
	23-2-2025	<b>S. U. N. D. A. Y.</b>
	24-2-2025	Replacement of diazo group by H, OH, F, Cl, Br, I, NO <sub>2</sub> and CN groups,
	25-2-2025	reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application
	26-2-2025	<b>HOLIDAY: MAHA SHIVRATRI</b>
	2-3-2025	<b>S. U. N. D. A. Y.</b>
5	3-3-2025	reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application
	4-3-2025	Preparation of nitro alkanes and nitro arenes and their chemical reactions
	9-3-2025	<b>S. U. N. D. A. Y.</b>
	10-3-2025	Preparation of nitro alkanes and nitro arenes and their chemical reactions
	11-3-2025	Preparation of nitro alkanes and nitro arenes and their chemical reactions
	16-03-2025	<b>S. U. N. D. A. Y.</b>
	17-3-2025	Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.

6	18-3-2025	Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.
	23-3-2025	<b>S. U. N. D. A. Y.</b>
	24-3-2025	Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.
	25-3-2025	<b>Remedial Class</b>
	29-3-2025	Test
	30-3-2025	<b>S. U. N. D. A. Y.</b>
	31-3-2025	<b>HOLIDAY: ID-UL-FITR</b>
7	1-4-2025	Nomenclature and structure of the carbonyl group
	6-4-2025	<b>S. U. N. D. A. Y.</b>
	7-4-2025	Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides
	8-4-2025	advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate
	10-4-2025	<b>HOLIDAY: MAHAVIR JAYANTI</b>
	13-4-2025	<b>S. U. N. D. A. Y.</b>
	14-4-2025	<b>HOLIDAY: AMBEDKAR JAYANTI</b>
	15-4-2025	Physical properties. Comparison of reactivities of aldehydes and ketones
	20-4-2025	<b>S. U. N. D. A. Y.</b>
	21-4-2025	Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations
	22-4-2025	Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction. Oxidation of aldehydes, Baeyer–Villiger oxidation of ketones, Cannizzaro reaction
	27-4-2025	<b>S. U. N. D. A. Y.</b>

	28-4-2025	. MPV, Clemmensen, Wolff-Kishner, LiAlH <sub>4</sub> and NaBH <sub>4</sub> reductions.
	29-4-2025	Organic Chemistry Assignment
	30-4-2025	<b>HOLIDAY: AKSHAY TRITYA</b>
	04-05-2025	<b>S. U. N. D. A. Y.</b>



**Aggarwal College Ballabgarh**

**LESSON PLAN**  
**17 WEEKS (JAN-APRIL)-2025**

**Name of Faculty: Dr. Jyoti Yadav**  
**Designation/ Department: Assistant Professor/Chemistry**

<b>CLASS: B.Sc. (Hons.) Chemistry</b>	<b>SEMESTER: 6th</b>	<b>SECTION: A</b>
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**SUBJECT: Physical Chemistry Theory II**

<b>Week</b>		
	<b>12-1-2025</b>	<b>S. U. N. D. A. Y.</b>
	<b>13-1-2025</b>	Planck's law, heat capacity of solids,
	<b>14-1-2025</b>	Bohr's model of hydrogen atom (derivation excluded) and its defects.
	<b>19-1-2025</b>	<b>S. U. N. D. A. Y.</b>
	<b>20-1-2025</b>	Compton effect, molecular orbital theory, basic idea,
<b>2</b>	<b>21-1-2025</b>	Criteria for forming molecular orbital from atomic orbitals
	<b>26-1-2025</b>	<b>REPUBLIC DAY /S. U. N. D. A. Y.</b>
	<b>27-1-2025</b>	Construction of molecular orbital by linear combination of atomic orbital, $H_2$ ion
	<b>28-1-2025</b>	Remedial Class
	<b>1-2-2025</b>	Test
	<b>2-2-2025</b>	<b>S. U. N. D. A. Y/BASANT PANCHAMI</b>
	<b>3-2-2025</b>	Calculation of energy levels from wave function
<b>3</b>	<b>4-2-2025</b>	physical picture of bonding and antibonding wave function.
	<b>9-2-2025</b>	<b>S. U. N. D. A. Y</b>
	<b>10-2-2025</b>	Concept of $\sigma$ , $\sigma^*$ orbitals and their characteristics
	<b>11-2-2025</b>	Hybrid orbital ( $sp$ , $sp^2$ and $sp^3$ ).



	12-2-2025	<b>HOLIDAY: GURU RAVIDAS JAYANTI</b>
	16-2-2025	<b>S. U. N. D. A. Y.</b>
	17-2-2025	Calculation of co-efficients of atomic orbitals used in these hybrid orbitals.
4	18-2-2025	Introduction of valence bond model of H <sub>2</sub>
	23-2-2025	<b>S. U. N. D. A. Y.</b>
	24-2-2025	comparison of molecular orbital. and valence bond. model
	25-2-2025	Remedial Class
	26-2-2025	<b>HOLIDAY: MAHA SHIVRATRI</b>
	2-3-2025	<b>S. U. N. D. A. Y.</b>
5	3-3-2025	Test
	4-3-2025	Homogeneous and Heterogeneous catalysis, Enzyme catalysis
	9-3-2025	<b>S. U. N. D. A. Y.</b>
	10-3-2025	Theory of catalysis -Intermediate compound formation theory,
	11-3-2025	adsorption theory, general characteristics of catalysis,
	16-03-2025	<b>S. U. N. D. A. Y.</b>
	17-3-2025	positive catalysis, negative catalysis, autocatalysis
6	18-3-2025	shape selective catalysis
	23-3-2025	<b>S. U. N. D. A. Y.</b>
	24-3-2025	Remedial Class
	25-3-2025	Test
	29-3-2025	Classification of chromatographic methods
	30-3-2025	<b>S. U. N. D. A. Y.</b>
	31-3-2025	<b>HOLIDAY: ID-UL-FITR</b>
7	1-4-2025	principle of differential migration, nature of differential migration

	6-4-2025	<b>S. U. N. D. A. Y.</b>
	7-4-2025	Adsorption phenomenon, nature of adsorbent, solvent system.
	8-4-2025	Rf values, application basic principle of partition
	10-4-2025	<b>HOLIDAY: MAHAVIR JAYANTI</b>
	13-4-2025	<b>S. U. N. D. A. Y.</b>
	14-4-2025	<b>HOLIDAY: AMBEDKAR JAYANTI</b>
	15-4-2025	paper, column, thin layer liquid-liquid partition and high performance.
	20-4-2025	<b>S. U. N. D. A. Y.</b>
	21-4-2025	Liquid chromatography, paper & column, thin layer liquid-liquid partition and high performance liquid chromatography
	22-4-2025	Liquid chromatography, paper & column, thin layer liquid-liquid partition and high performance liquid chromatography
	27-4-2025	<b>S. U. N. D. A. Y.</b>
	28-4-2025	Remedial Class
	29-4-2025	Physical Chemistry Assignment
	30-4-2025	<b>HOLIDAY: AKSHAY TRITYA</b>
	04-05-2025	<b>S. U. N. D. A. Y.</b>



# Aggarwal College Ballabgarh

## LESSON PLAN

17 WEEKS (JAN-APRIL)-2025

Name of Faculty: Dr. Jyoti Yadav

Designation/ Department: Assistant Professor/Chemistry

CLASS: M.Sc Chemistry	SEMESTER: 2nd	SECTION: A
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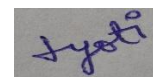
SUBJECT: Physical Chemistry Theory

Week		
1	9-1-2025	Electromagnetic radiations, interaction of electromagnetic radiation with matter,
	10-1-2025	regions of spectrum, width and intensity of spectral transitions.
	11-1-2025	Resolving power, transition probability.
	12-1-2025	S. U. N. D. A. Y.
	15-1-2025	Rotational spectra of diatomic molecules (rigid rotator), spectrum of non-rigid rotator, effect of isotopic substitutions
	16-1-2025	rotational spectra of linear and symmetric top polyatomic molecules.
2	17-1-2025	Vibrating diatomic molecule (simple harmonic vibrator), anharmonicity,
	18-1-2025	diatomic vibrating rotator, interaction of rotations and vibrations, vibrational spectra of polyatomic molecules, analysis by infrared technique.
	19-1-2025	S. U. N. D. A. Y.
	24-1-2025	Electronic spectra of diatomic molecules
	25-1-2025	vibrational course structure and rotational fine structure of electronic band
	26-1-2025	REPUBLIC DAY /S. U. N. D. A. Y.
	29-1-2025	Frank-Condon principle (intensity of vibrational-electronic band, dissociation energy), Fortrat diagram
3	30-1-2025	Remedial Class
	31-1-2025	Test
	1-2-2025	Basic concepts of photochemistry, rate constant & life time of excited electronic states of atoms and molecules,

	2-2-2025	<b>S. U. N. D. A. Y/BASANT PANCHAMI</b>
	5-2-2025	charge transfer transitions.
	6-2-2025	Frank-Condon principle
	7-2-2025	emission spectra, environment effect on absorption and emission spectra
4	8-2-2025	Wigner's spin conservation rule
	9-2-2025	<b>S. U. N. D. A. Y</b>
	12-2-2025	<b>HOLIDAY: GURU RAVIDAS JAYANTI</b>
	13-2-2025	Modes of decay of excited states,
	14-2-2025	., quenching of fluorescence, delayed fluorescence
	15-2-2025	kinetics of collisional quenching
	16-2-2025	<b>S. U. N. D. A. Y.</b>
5	19-2-2025	Stern–Volmer equation. Excimer and exciplex formation and decay.
	20-2-2025	Techniques for the study of transient species in photochemical reactions.
	21-2-2025	Applications of Lasers in photochemical kinetics
	22-2-2025	Doubt Class
	23-2-2025	<b>S. U. N. D. A. Y.</b>
	26-2-2025	<b>HOLIDAY: MAHA SHIVRATRI</b>
	27-2-2025	<b>Test</b>
6	28-2-2025	Symmetry elements and symmetry operation
	1-3-2025	point group and its properties, group multiplication table
	2-3-2025	<b>S. U. N. D. A. Y.</b>
	5-3-2025	Schonflies symbol, representation of groups by matrices (representation for $C_n$ , $C_{nv}$ , $C_{nh}$ , $C_s$ , $D_{nh}$ , etc. groups to be worked out explicitly).
	6-3-2025	Schonflies symbol, representation of groups by matrices (representation for $C_n$ , $C_{nv}$ , $C_{nh}$ , $C_s$ , $D_{nh}$ , etc. groups to be worked out explicitly).

	7-3-2025	Point groups of following molecules: H <sub>2</sub> O, NH <sub>3</sub> , CH <sub>4</sub> , SF <sub>6</sub> , CHCl <sub>3</sub> , BF <sub>3</sub> , C <sub>6</sub> H <sub>6</sub> , C <sub>5</sub> H <sub>5</sub> , NSF <sub>3</sub> , C <sub>2</sub> H <sub>2</sub> , HCl, HCN, CO <sub>2</sub> , <i>etc.</i>
	8-3-2025	Point groups of following molecules: H <sub>2</sub> O, NH <sub>3</sub> , CH <sub>4</sub> , SF <sub>6</sub> , CHCl <sub>3</sub> , BF <sub>3</sub> , C <sub>6</sub> H <sub>6</sub> , C <sub>5</sub> H <sub>5</sub> , NSF <sub>3</sub> , C <sub>2</sub> H <sub>2</sub> , HCl, HCN, CO <sub>2</sub> , <i>etc.</i>
7	9-3-2025	<b>S. U. N. D. A. Y.</b>
	12-3-2025	Irreducible representation of groups
	13-3-2025	The Great Orthogonality theorem (without proof) and its importance
	14-3-2025	The Great Orthogonality theorem (without proof) and its importance
	15-3-2025	Character tables and its applications in spectroscopy.
	16-03-2025	<b>S. U. N. D. A. Y.</b>
	19-3-2025	Character tables and its applications in spectroscopy.
8	20-3-2025	Presentation
	21-3-2025	Presentation
	22-3-2025	Presentation
	23-3-2025	<b>S. U. N. D. A. Y.</b>
	26-3-2025	Presentation
	27-3-2025	Presentation
	28-3-2025	<b>Remedial class</b>
9	29-3-2025	<b>Test</b>
	30-3-2025	<b>S. U. N. D. A. Y.</b>
	31-3-2025	<b>HOLIDAY: ID-UL-FITR</b>
	3-4-2025	Polarization phenomenon and its theories
	4-4-2025	effect of concentration on cell potential
	5-4-2025	Concept of Liquid-Junction potential
	6-4-2025	<b>S. U. N. D. A. Y.</b>
10	9-4-2025	reference electrodes (Calomel, Ag/AgCl, Tl/TlCl)

	10-4-2025	<b>HOLIDAY: MAHAVIR JAYANTI</b>
	11-4-2025	reference electrodes (Calomel, Ag/AgCl, Tl/TlCl)
	12-4-2025	reference electrodes (Calomel, Ag/AgCl, Tl/TlCl)
	13-4-2025	<b>S. U. N. D. A. Y.</b>
	14-4-2025	<b>HOLIDAY: AMBEDKAR JAYANTI</b>
	16-4-2025	Metallic redox indicator electrode: Membrane and ion-selective electrodes
11	17-4-2025	Metallic redox indicator electrode: Membrane and ion-selective electrodes
	18-4-2025	Metallic redox indicator electrode: Membrane and ion-selective electrodes
	19-4-2025	<b>TEST</b>
	20-4-2025	<b>S. U. N. D. A. Y.</b>
	23-4-2025	electrical properties of the membrane, glass electrode with special reference to H <sup>+</sup> , Na <sup>+</sup> , K <sup>+</sup> ions, operation of solid membrane electrode and liquid membrane electrode and coated type ion electrode
	24-4-2025	electrical properties of the membrane, glass electrode with special reference to H <sup>+</sup> , Na <sup>+</sup> , K <sup>+</sup> ions, operation of solid membrane electrode and liquid membrane electrode and coated type ion electrode
	25-4-2025	electrical properties of the membrane, glass electrode with special reference to H <sup>+</sup> , Na <sup>+</sup> , K <sup>+</sup> ions, operation of solid membrane electrode and liquid membrane electrode and coated type ion electrode
12	26-4-2025	Applications of ion selective electrode in determination of some toxic metals and some anions (F <sup>-</sup> , Cl <sup>-</sup> , Br <sup>-</sup> , I <sup>-</sup> and NO <sub>3</sub> <sup>-</sup> ).
	27-4-2025	<b>S. U. N. D. A. Y.</b>
	30-4-2025	<b>HOLIDAY: AKSHAY TRITYA</b>
	01-05-2025	Applications of ion selective electrode in determination of some toxic metals and some anions (F <sup>-</sup> , Cl <sup>-</sup> , Br <sup>-</sup> , I <sup>-</sup> and NO <sub>3</sub> <sup>-</sup> ).
	02-05-2025	Remedial Class
	03-05-2025	<b>Physical Chemistry assignment</b>
	04-05-2025	<b>S. U. N. D. A. Y.</b>



Signature