Lesson Plan

MCM DAV College for Women, Sector – 36 A, Chandigarh

Monthly Teaching Plans (Odd Semester)

Session: 2026-27

Name of the Teacher: Dr. Sagarika Dev and Dr. Nisha Dawra

Department: Chemistry

Class: B. Sc (3rd Semester) **Subject:** Chemistry (CHM-DSC-3_Maj/Min-301)

S. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	20-07-2026	14-08-2026	**INORGANIC CHEMISTRY** **Chemistry of s-Block Elements** Comparative study, diagonal relationships, salient features of hydrides. **ORGANIC CHEMISTRY** **Alkenes and Cycloalkenes** Nomenclature of alkenes, methods of formation, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides, regioselectivity in alcohol dehydration.	Lecture

			PHYSICAL CHEMISTRY **Thermochemistry:** Standard state, standard enthalpy of formation-Hess's Law of constant Heat Summation and its applications. Heat of reaction at constant pressure and at constant volume, Enthalpy of neutralisation	
2.	17-08-2026	15-09-2026	**INORGANIC CHEMISTRY** **Chemistry of s-Block Elements** Solvation and complexation tendencies, including their function in biosystems, and an introduction to alkyls and aryls. **ORGANIC CHEMISTRY** **Alkenes and Cycloalkenes** Saytzeff's Rule, Hofmann elimination, physical properties and relative stabilities of alkenes, Chemical reactions of alkenes–mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration-oxidation, oxymercuration-reduction. Epoxidation, ozonolysis,	Lecture and discussion

			hydration, hydroxylation and oxidation with $KMnO_4$, Polymerization of alkenes, Substitution at the allylic and vinylic positions of alkenes, Methods of formation, conformation and chemical reactions of cycloalkenes. **PHYSICAL CHEMISTRY** **Thermochemistry:** Bond dissociation energy and its calculation from thermochemical data, temperature dependence of enthalpy. Kirchhoff's equation.	
3.	16-9-2026	15-10-2026	**INORGANIC CHEMISTRY** **Chemistry of Noble Gases** Occurrence and uses, rationalisation of inertness of noble gases, Clathrates; preparation and properties of XeF_2, XeF_4 and XeF_6 **ORGANIC CHEMISTRY** **Dienes and Alkynes:** Nomenclature and classification of dienes: Isolated, conjugated and cumulated dienes. Structure of allenes and butadiene, methods of formation, and polymerisation. Chemical	Lecture

			reactions – 1,2 and 1,4 additions, **PHYSICAL CHEMISTRY** **Thermodynamics II:** Second Law of Thermodynamics: Need for the law, different statements of the law, Carnot cycle and its efficiency, Carnot theorem. Thermodynamic scale of temperature, Concept of Entropy: Entropy as a state function, entropy as a function of V & T	
4.	16-10-2026	17-11-2026	**INORGANIC CHEMISTRY** **Chemistry of Noble Gases** Nature of bonding in noble gas compounds (Valence bond treatment and MO treatment for XeF_2), Molecular shapes of noble gas compounds (VSEPR theory) **ORGANIC CHEMISTRY** **Dienes and Alkynes** Diels-Alder reaction. Nomenclature, structure and bonding in alkynes. Methods of formation.Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and	Lecture and group discussion

			nucleophilic addition reactions, hydroboration-oxidation, metal-ammonia reductions, oxidation and polymerisation. **PHYSICAL CHEMISTRY** **Thermodynamics II:** entropy as a function of P & T, entropy change in physical change, Clausius inequality, entropy as a criterion of spontaneity and equilibrium. Entropy change in ideal gases and mixing of gases.	

Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
26-08-2026	The teachers have completed the scheduled chapters and topics as shown in the lesson plan
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
30-09-2026	The teachers have completed the scheduled chapters and topics as shown in the lesson plan
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
28-10-2026	The teachers have completed the scheduled chapters and topics as shown in the lesson plan
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
10-11-2026	The teachers have completed the scheduled chapters and topics as shown in the lesson plan

***Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.Other Methods adopted by the teacher – Please write the specific teaching method

Lesson Plan

MCM DAV College for Women, Sector – 36 A, Chandigarh

Monthly Teaching Plans (Odd Semester)

Session: 2026-27

Name of the Teacher: Dr. Qudrat Hundal, Dr. Madhuri, Dr. Aanchal Batra

Department: Chemistry

Class: B.Sc (3rd Semester) **Subject:** (CHM-DSC-5-MIN302)

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	20-07-2026	31-08-2026	**INORGANIC CHEMISTRY** **Group 13 Elements:** Comparative study (including diagonal relationship) of groups 13 elements, Study of the following compounds with emphasis on structure, bonding, preparation, properties and uses**:** **ORGANIC CHEMISTRY** **Aromaticity and Arenes:** Aromaticity: The Huckel's rule, aromatic ions. Nomenclature of benzene derivatives, aryl group, aromatic nucleus and side chain, Structure of benzene: Molecular formula and Kekule structure. Stability and carbon-carbon bond lengths of benzene, resonance structure, and MO picture.	Lecture

			PHYSICAL CHEMISTRY **Thermodynamics-III:** Third Law of Thermodynamics: Nernst heat theorem, statement and concept of residual entropy, evaluation of absolute entropy from heat capacity data.	
2.	01-09-2026	30-09-2026	**INORGANIC CHEMISTRY** **Group 13 Elements:** Boric acid and borates, boron nitrides, boron hydrides (diborane), boron halides, alumina. **ORGANIC CHEMISTRY** **Aromaticity and Arenes:** Aromatic electrophilic substitution- General pattern of the mechanism, role of σ and π-complexes. Mechanism of nitration, halogenation,sulphonation, mercuration and Friedel-Crafts reaction.Energy profile diagrams. Activating and deactivating substituents, orientation and ortho/para ratio. Side chain reactions of benzene derivatives. Methods of formation and chemical reactions of alkylbenzenes, alkynylbenzenes and biphenyl. **PHYSICAL CHEMISTRY** **Thermodynamics-III:** Gibbs and Helmholtz functions; Gibbs function (G) and Helmholtz functions (A) as thermodynamic quantities, A & G as criteria for thermodynamic equilibrium and spontaneity, and their advantage over	Lecture and discussion

			entropy change. Variation of G and A with P, V and T.	
3.	01-10-2026	31-10-2026	**<u>INORGANIC CHEMISTRY</u>** **Group 14 Elements:** Comparative study (including diagonal relationship) of groups 14 elements, allotropic forms of carbon, graphitic compounds, **<u>ORGANIC CHEMISTRY</u>** **Alkyl and Aryl halides:** Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms of nucleophilic substitution reactions of alkyl halides, SN^2 and SN^1 reactions with energy profile diagrams. Methods of formation of aryl halides, nuclear and side chain reactions. The addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. **<u>PHYSICAL CHEMISTRY</u>** **Chemical Equilibrium:** Equilibrium constant and free energy, Thermodynamic derivation of law of mass action, Le-Chatelier's principle,	Lecture
4.	01-10-2026	17-11-2026	**<u>INORGANIC CHEMISTRY</u>** **Group 14 Elements:** compounds like hydrides, oxides, oxyacids and halides of groups 14, fullerenes, carbides, fluorocarbons.	Lecture and group discussion

			ORGANIC CHEMISTRY **Alkyl and Aryl halides:** Relative reactivities of alkylhalides vs. allyl, vinyl and aryl halides. **PHYSICAL CHEMISTRY** **Chemical Equilibrium:** Reaction isotherm and Reaction isochore-Clapeyron equation and Clausius–Clapeyron equation, applications.	

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10-11-2026	The teachers have completed the scheduled chapters and topics as shown in the lesson plan

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Lesson Plan

MCM DAV College for Women, Sector – 36 A, Chandigarh

Monthly Teaching Plans (Even Semester)

Session: 2026-27

Name of the Teacher: Dr. Qudrat Hundal, Dr. Madhuri, Dr. Aanchal Batra

Department: Chemistry

Class: B. Sc (4th Semester) **Subject:** (CHM-DSC-5-MAJ-401)

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	15-01-2027	31-01-2027	**INORGANIC CHEMISTRY** **Group 13 Elements:** Comparative study (including diagonal relationship) of groups 13 elements, Study of the following compounds with emphasis on structure, bonding, preparation, properties and uses**:** **ORGANIC CHEMISTRY** **Aromaticity and Arenes:** Aromaticity: The Huckel's rule, aromatic ions. Nomenclature of benzene derivatives, aryl group, aromatic nucleus and side chain, Structure of benzene: Molecular formula and Kekule structure. Stability and carbon-carbon bond lengths of benzene, resonance structure, and MO picture.	Lecture

			PHYSICAL CHEMISTRY **Thermodynamics-III:** Third Law of Thermodynamics: Nernst heat theorem, statement and concept of residual entropy, evaluation of absolute entropy from heat capacity data.	
2.	01-02-2027	28-02-2027	**INORGANIC CHEMISTRY** **Group 13 Elements:** Boric acid and borates, boron nitrides, boron hydrides (diborane), boron halides, alumina. **ORGANIC CHEMISTRY** **Aromaticity and Arenes:** Aromatic electrophilic substitution- General pattern of the mechanism, role of σ and π-complexes. Mechanism of nitration, halogenation, sulphonation, mercuriation and Friedel-Crafts reaction. Energy profile diagrams. Activating and deactivating substituents, orientation and ortho/para ratio. Side chain reactions of benzene derivatives. Methods of formation and chemical reactions of alkylbenzenes, alkynyl benzenes and biphenyl. **PHYSICAL CHEMISTRY** **Thermodynamics-III:** Gibbs and Helmholtz functions; Gibbs function (G) and Helmholtz functions (A) as thermodynamic quantities, A & G as criteria for thermodynamic equilibrium and spontaneity, and their advantage over	Lecture and discussion

			entropy change. Variation of G and A with P, V and T.	
3.	01-03-2027	31-03-2027	**INORGANIC CHEMISTRY** **Group 14 Elements:** Comparative study (including diagonal relationship) of groups 14 elements, allotropic forms of carbon, graphitic compounds, **ORGANIC CHEMISTRY** **Alkyl and Aryl halides:** Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms of nucleophilic substitution reactions of alkyl halides, S_N^2 and S_N^1 reactions with energy profile diagrams. Methods of formation of aryl halides, nuclear and side chain reactions. The addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. **PHYSICAL CHEMISTRY** **Chemical Equilibrium:** Equilibrium constant and free energy, Thermodynamic derivation of law of mass action, Le-Chatelier's principle,	Lecture
4.	01-04-2027	25-04-2027	**INORGANIC CHEMISTRY** **Group 14 Elements:** compounds like hydrides, oxides, oxyacids and halides of groups 14, fullerenes, carbides, fluorocarbons. **ORGANIC CHEMISTRY**	Lecture and group discussion

			Alkyl and Aryl halides: Relative reactivities of alkylhalides vs. allyl, vinyl and aryl halides. **<u>PHYSICAL CHEMISTRY</u>** **Chemical Equilibrium:** Reaction isotherm and Reaction isochore-Clapeyron equation and Clausius–Clapeyron equation, applications.	

Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
27th January, 2027	The teachers have completed the scheduled chapters and topics as shown in the lesson plan
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
24th February, 2027	The teachers have completed the scheduled chapters and topics as shown in the lesson plan
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
24th March, 2027	The teachers have completed the scheduled chapters and topics as shown in the lesson plan
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
21st April, 2027	The teachers have completed the scheduled chapters and topics as shown in the lesson plan

***Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc. Other Methods adopted by the teacher – Please write the specific teaching method

Lesson Plan

MCM DAV College for Women, Sector – 36 A, Chandigarh

Monthly Teaching Plans (Even Semester)

Session: 2026-27

Name of the Teacher: Dr. Madhuri Tanaji Patil, Dr. Rishu, Dr. Nisha

Department: Chemistry

Class: B. Sc. (4th Semester) **Subject:** Chemistry (CHM-DSC-6-MAJ-402/MIN-401)

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	15-01-2027	31-01-2027	**INORGANIC CHEMISTRY** **UNIT I: Group 15 Elements** Types of covalence in nitrogen, stereochemistry, chemical reactivity, dinitrogen complexes (basic idea only), hydrides of nitrogen, nitrogen halides, oxides and oxoacids, Phosphorus, As, Sb & Bi: Stereochemistry of their compounds, production of elemental P and its allotropic forms, hydrides, halides, oxides and oxy-acids **ORGANIC CHEMISTRY** **Unit II Alcohols &**	Lecture

			Phenols Classification and nomenclature, Monohydric alcohols. Nomenclature, methods of formation by reduction of aldehydes, ketones, carboxylic acids and esters. Hydrogen bonding, Acidic nature, Reactions of alcohols, Dihydric and Trihydric alcohols. **PHYSICAL CHEMISTRY** **Unit III Solid State** Definition of space lattice, unit cell and Miller Indices Laws of Crystallography – (i) Law of Constancy of Interfacial Angles.	
2.	01-02-2027	28-02-2027	**INORGANIC CHEMISTRY** **Unit I Group 16 Elements** Chemical Reactivity, group trends and stereochemistry of Oxygen, S, Se and Te Family, dioxygen as a ligand (basic idea only), structure of O_3 and H_2O_2, clathrate hydrates. **ORGANIC CHEMISTRY** **Unit II Alcohols & Phenols** Nomenclature, methods of formation, chemical	Lecture and discussion

			reactions of vicinal glycols and glycerol. Preparation of phenols, physical properties and acidic character, Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. **PHYSICAL CHEMISTRY** **Unit III Solid State** (ii) Law of Rationality of Indices, (iii) Law of Symmetry. Symmetry elements in crystals. X-ray diffraction by crystals.	
3.	01-03-2027	31-03-2027	**INORGANIC CHEMISTRY** **Unit I Group 16 Elements** Allotropic forms of S and Se, structures of halides, oxides and oxyacids of S, Se and Te, S-N compounds (neutral) Polyatomic cations of S, Se and Te. **ORGANIC CHEMISTRY** **Unit II Alcohols & Phenols** Reactions of phenols- electrophilic aromatic substitution, acylation and carboxylation, Mechanisms of Fries rearrangement, Claisen rearrangement, Gattermann synthesis, and	Lecture

			Reimer-Tiemann reaction **Ethers and Epoxides** Nomenclature of ether **<u>PHYSICAL CHEMISTRY</u>** **Unit III Solid State** Derivation of the Bragg equation. Determination of the crystal structure of NaCl, KCl and CsCl (Laue's method and powder method).	
4.	01-04-2027	25-04-2027	**<u>INORGANIC CHEMISTRY</u>** **Unit I Group 17 Elements** Chlorine, interhalogen compounds, polyhalide ions, and pseudo halogens. **<u>ORGANIC CHEMISTRY</u>** **Unit II Ethers and Epoxides** Methods of their formation, physical properties, Chemical reaction cleavage and autoxidation, Ziesel's method, Synthesis of epoxides, **<u>PHYSICAL CHEMISTRY</u>** **Unit III Solid State** Applications of Powder diffraction for structure	Lecture and group discussion

			determination, Thermal and photochemical reaction in the solid state.	

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