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 and Dr. Rishu

Department: Chemistry

Class: B.Sc III (5th Semester)

Subject: CHM-DSC-6-MAJ-501 and CHM-DSC-6-MIN-501 (Table 2) Inorganic Chemistry

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	20.07.2026	31.07.2026	**UNIT I: Chemistry of d-Block Elements** **First Transition Series** Position in the periodic table, Electronic configuration, Physical and Chemical properties–Atomic radii, covalent radii, density, melting and boiling points, oxidation states, ionization energies, reducing properties, electronegativity, electron affinity, metallic behaviour, magnetic properties, colour, complex formation, interstitial compounds, catalytic properties, alloy formation. Relative stability of their oxidation states, coordination number and geometry.	Lecture

2.	01.08.2026	31.08.2026	**UNIT I: Chemistry of d-Block Elements** **First Transition Series** Chemistry of compounds and complexes of Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, and Zn. **Second and Third Transition Series** General characteristics, comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties and stereochemistry. Important compounds of Zr, Nb, Ta, Mo, Ru, Rh, Pd, W, Re, Os, Ir, Pt, Au, Hg, Aqueous chemistry. Isopoly and heteropoly. Metal-metal bonding. **UNIT III: Chemistry of Coordination Compounds** **Coordination Chemistry – 1** Definitions and terminology, Types of ligands, Werner's coordination theory and its experimental verification.	Lecture and discussion
3.	01.09.2026	30.09.2026	**UNIT III: Chemistry of Coordination Compounds** **Coordination Chemistry – 1** Effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, Stereochemistry of coordination compounds, Valence bond theory of	Lecture

			transition metal complexes. Properties of Coordination compounds, i.e. magnetic properties, colours (Qualitative approach only), and use of coordination compounds.	
4.	01.10.2026	31.10.2026	**UNIT II: Chemistry of f-Block Elements** **Lanthanide Elements** Occurrence and isolation, electronic structure, oxidation states and ionic radii, lanthanide contraction, complex formation, colour and spectral properties, magnetic properties, lanthanide complexes and compounds (oxides, hydroxides, nitrides, etc)and their uses. **Actinide Elements** General features and chemistry of actinides, comparison with lanthanides, extraction of Th from Monazite sand, extraction of U, chemistry of separation of Np, Pu and Am from U, Transuranic elements. Later or heavier actinides.	Lecture and discussion
5.	01.11.2026	17.11.2026	**UNIT II: Chemistry of f-Block Elements** **Actinide Elements** Chemistry of separation of Np, Pu and Am from U, Transuranic elements. Later or heavier actinides.	Discussion

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. Shefali Dhiman and Dr. Madhuri Tanaji Patil

Department: Chemistry

Class: B. Sc III (5th Semester)

Subject: CHM-DSC-7-MAJ-502 and CHM-DSC-7-MIJ-502 (Table 2) Organic Chemistry

S. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	20-07-2026	31-07-2026	**Unit I: Carbonyl Compounds** **Aldehydes and Ketones** Nomenclature and structure of the carbonyl group. Physical properties of aldehydes & ketones.	Lecture
2.	01-08-2026	31-08-2026	**Unit I: Carbonyl Compounds** **Aldehydes and Ketones** Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides. Synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids.	Lecture and discussion

			Mechanism of nucleophilic additions to carbonyl group with particular emphasis on Benzoin, Aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives, Wittig reaction. Use of acetals as protecting group. Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen, Wolff-Kishner, LiAlH4 and NaBH4 reductions.	
3.	01-09-2026	30-09-2026	**Unit II: Carboxylic Acids and Derivatives** **Carboxylic Acids** Nomenclature, structure and bonding, physical properties, acidity of carboxylic acids, effects of substitutions on acid strength. Preparations of carboxylic acids. Reactions of carboxylic acids. Mechanism of decarboxylation. Methods for formation of halo acids. **Carboxylic Acid Derivatives** Structure and nomenclature of acid chlorides, esters, amides and acid anhydrides. Relative stability & reactivity of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution.	Lecture
4.	01-10-2026	31-10-2026	**Unit II: Carboxylic Acids and Derivatives** **Carboxylic Acid Derivatives**	Lecture and discussion

			Preparation of carboxylic acid derivatives, chemical reactions. Mechanisms of esterification and hydrolysis (acidic and basic). **Unit III: Organometallic Compounds and Enolates** **Organic Synthesis via Enolates** Acidity of α-hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate.	
5.	01-11-2026	17-11-2026	**Unit III: Organometallic Compounds and Enolates** **Organometallic Compounds:** Organomagnesium Compounds: The Grignard reagents: Formation, structure and chemical reactions. Organozinc Compounds: Formation and Chemical Reactions. Organolithium Compounds: Formation and Chemical Reactions.	Discussion

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 (Even Semester)

Session: 2026-27

Name of the Teacher: Dr. Sagarika Dev (Tentative)

Department: Chemistry

Class: B.Sc III (6th Semester) **Subject:** CHM-DSC-8-MAJ-601

Physical Chemistry

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	15.01.2027	31.01.2027	**UNIT – I Solutions** **Solutions and Colligative Properties** Dilute Solutions and Colligative Properties: Ideal and non-ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient. Dilute solution, colligative properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis, law of osmotic pressure and its measurement, determination of molecular weight from osmotic pressure.	Lecture

2.	01.02.2027	28.02.2027	**UNIT – I Solutions** **Solutions and Colligative Properties** Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression of freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, degree of dissociation and association of solutes. **UNIT – II Electrochemistry** **Electrochemistry – I** Electrical transport – Conduction in metals and in electrolyte solutions, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of equivalent and specific conductance with dilution. Migration of ions and Kohlrausch Law, Arrhennius theory of electrolyte dissociation and its limitations, weak and strong electrolytes.	Lecture
3.	01.03.2027	31.03.2027	**UNIT – II Electrochemistry** **Electrochemistry – I** Ostwald's dilution law, its uses and limitations. Debye Huckel-Onsager's equation for strong electrolytes (elementary treatment only). Transport number	Lecture

			Electrochemistry-II Types of reversible electrodes – gas metal – ion, metal – insoluble salt –anion and redox electrodes. Electrode reactions, Nernst equation, derivation of cell E.M.F. and single electrode potential, standard hydrogen electrode – reference electrodes–standard electrode potential, sign conventions, electrochemical series and its significance. **UNIT – III Photochemistry** **Photochemistry** Interaction of radiation with matter, difference between thermal and photo chemical processes. Laws of Photochemistry: Grothus – Drapper law, Stark–Einstein law.	
4.	01.04.2027	26.04.2027	**UNIT – III Photochemistry** **Photochemistry** Jablonski diagram depicting various processes occurring in the excited state. Qualitative description of fluorescence, phosphorescence, non-radiative processes(internal conversion, intersystem crossing), quantum yield, photosensitized reactions– energy transfer processes (simple examples). Photochemistry of carbonyl compounds and alkenes.	Lecture

Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
27.01.2027	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	
24.02.2027	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	
31.03.2027	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	
21.04.2027	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 (Odd Semester)

Session: 2026-27

Name of the Teacher: Dr. Shefali Dhiman and Dr. Madhuri Tanaji Patil

Department: Chemistry

Class: B. Sc III (6^{th} Semester)

Subject: CHM-DSC-9-MAJ-602 (Table 2) General Chemistry-6

S. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	15-01-2027	31-01-2027	**UNIT I: Inorganic Chemistry (15 Hrs.)** **Coordination Chemistry – II** Limitations of valence bond theory, Crystal field theory, CFSE in weak and strong fields, pairing energies, factors affecting the magnitude of 10 Dq (Δo, Δt). The splitting of d-orbitals in different fields (octahedral, tetrahedral, tetragonally distorted octahedral, square planar, trigonal bipyramidal),	Lecture
2.	01-02-2027	28-02-2027	**UNIT I:** **Coordination Chemistry – II** Introduction to Orgel diagrams, Consequences and applications of orbital splitting, crystal field stabilization energy, magnetic	Lecture and discussion

			properties, measurement of 10 Dq (Δo), Factors affecting the extent of splitting and spectrochemical series, colour of transition metal complexes. **UNIT I: Inorganic Chemistry** **Organometallic Compounds** Organometallic compounds Definition, nomenclature and types of organometallic compounds. Classification of ligands, Hapticity, EAN rule, Nomenclature of organometallic compounds, Bonding in organometallic compounds, Preparation, properties, bonding and applications of alkyls and aryls of Li, Al , Hg, Sn and Ti. A brief account of metal – olefin complexes, alkyne complexes, homogeneous hydrogenation,	
3.	01-03-2027	31-03-2027	**UNIT I: Inorganic Chemistry** Metal carbonyls – Preparation, bonding and reactions, Structures and the nature of bonding in bi, tri, tetranuclear metal carbonyls. **UNIT II: Organic Chemistry Substituted carboxylic acids:** Hydroxyl acids: Malic, tartaric and citric acids (structural features only). Methods of formation and chemical reactions of	Lecture

			unsaturated monocarboxylic acids. **Dicarboxylic acids:** Methods of formation and effects of heat and hydrating agents. **Fats, Oils and Detergents:** Natural fats, edible and industrial oils of vegetable origin, common fatty acids, glycerides, hydrogenation of unsaturated oils. Saponification value, iodine value, acid value. Soaps and detergents (classification and mechanism of action); alkyl and aryl sulphonates.	
4.	01-03-2027	31-03-2027	**UNIT II: Organic Chemistry** **Fused Heterocyclic compounds:** Introduction to condensed-five and six-membered heterocycles. Preparation and reactions of indole, quinoline and isoquinoline. Mechanism of electrophilic substitution reactions of indole, quinoline and isoquinoline **UNIT III: Physical (15 Hrs.)** Ionic Equilibria: Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono-, di-and tri protic acids	Lecture and discussion

			(exact treatment). Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts.	
5.	01-04-2027	25-04-2027	**UNIT III: Physical** Buffer solutions; derivation of Henderson equation and its applications; buffer capacity, buffer range, buffer action and applications of buffers in analytical chemistry and biochemical processes in the human body. Solubility and solubility product of sparingly soluble salts –applications of solubility product principle. Qualitative treatment of acid – base titration curves (calculation of pH at various stages). Theory of acid–base indicators; selection of indicators and their limitations.	Discussion

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Lesson Plan

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

Monthly Teaching Plans (Odd Semester)

Session: 2026-27

Name of the Teacher: Dr. Shefali Dhiman and Dr. Madhuri Tanaji Patil

Department: Chemistry

Class: B. Sc III (6th Semester)

Subject: CHM-DSC-7-MIN-601 (Table 2) Organic Chemistry

S. No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1.	15-01-2027	31-01-2027	**Unit I: Carbonyl Compounds** **Aldehydes and Ketones** Nomenclature and structure of the carbonyl group. Physical properties of aldehydes & ketones.	Lecture
2.	01-02-2027	28-02-2027	**Unit I: Carbonyl Compounds** **Aldehydes and Ketones** Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides. Synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids.	Lecture and discussion

			Mechanism of nucleophilic additions to carbonyl group with particular emphasis on Benzoin, Aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives, Wittig reaction. Use of acetals as protecting group. Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen, Wolff-Kishner, LiAlH4 and NaBH4 reductions.	
3.	01-03-2027	31-03-2027	**Unit II: Carboxylic Acids and Derivatives** **Carboxylic Acids** Nomenclature, structure and bonding, physical properties, acidity of carboxylic acids, effects of substitutions on acid strength. Preparations of carboxylic acids. Reactions of carboxylic acids. Mechanism of decarboxylation. Methods for formation of halo acids. **Carboxylic Acid Derivatives** Structure and nomenclature of acid chlorides, esters, amides and acid anhydrides. Relative stability & reactivity of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution. **Carboxylic Acid Derivatives** Preparation of carboxylic acid derivatives, chemical	Lecture

			reactions. Mechanisms of esterification and hydrolysis (acidic and basic).	
4.	01-04-2027	25-04-2027	**Unit III: Organometallic Compounds and Enolates** **Organic Synthesis via Enolates** Acidity of α-hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate. **Organometallic Compounds:** Organo magnesium Compounds: The Grignard reagents: Formation, structure and chemical reactions. Organozinc Compounds: Formation and Chemical Reactions. Organolithium Compounds: Formation and Chemical Reactions.	Lecture and discussion

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Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans	
31-03-2027	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	
21-04-2027	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