

P.I.G. GOVT. COLLEGE FOR WOMEN, JIND
LESSON-PLAN (Session 2021-22) EVEN SEMESTER

Name of Teacher: Mr. Surender kumar
 Designation: Assistant professor
 Subject: Chemistry (Physical Chemistry)
 Class: B.Sc. Ist (medical), semester-II

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	April	Kinetics Rate of reaction, rate equation and its types, factors influencing the rate of a reaction – concentration, temperature, pressure, solvent, light, catalyst. Order of a reaction, integrated rate expression for zero order, first order, second and third order reactions. Half life period of a reaction.	
2	May	Effect of temperature on the rate of reaction – Arrhenius equation. Theories of reaction rate – Simple collision theory for unimolecular collision. Transition state theory of bimolecular reactions class test of this chapter. one assignment	

Class B.Sc Ist Non. Med Organic chemistry

3	June	Alkyl and Aryl Halides Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms and stereochemistry of nucleophilic substitution reactions of alkyl halides, S _N 2 and S _N 1 reactions with energy profile diagrams.	
4	July	Methods of formation and reactions of aryl halides, The addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions.	

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	Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides. class test of this chapter. one assignment	
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*Vacation as per university calendar

- 1 assignments and 01 unit test will be taken as per schedule.

**P.I.G. GOVT. COLLEGE FOR WOMEN, JIND
LESSON-PLAN (Session 2021-22) EVEN SEMESTER**

Name of Teacher: Mr.Surender kumar

Designation: Assistant professor

Subject: Chemistry (Organic Chemistry)

Class: B.Sc. II (Non-Medical & medical), semester-IV

Subject/Paper: Sr. No.	Months	Topics to be covered	Remarks if any,
1	April	<p>Aldehydes and Ketones</p> <p>Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate. Physical properties,</p>	
2	May	<p>Comparison of reactivities of aldehydes and ketones. 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. Mannich reaction. Oxidation of aldehydes, Baeyer– Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, WolffKishner, LiAlH₄ and NaBH₄ reduction</p> <p>Class test of this chapter.</p>	
3	June	<p>Amines Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines, Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds. Gabrielphthalimide reaction, Hofmann bromamide reaction. Electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.</p>	

4	July	<p>Diazonium Salts Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO₂ and CN groups, reduction of diazonium salts to hyrazines, coupling reaction and its synthetic applications.</p> <p>class test of this chapter and one assignment.</p> <p>Revision of syllabus.</p>	
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P.I.G. GOVT. COLLEGE FOR WOMEN, JIND
LESSON-PLAN (Session 2021-22) EVEN SEMESTER

Name of Teacher: Mr.Surender kumar

Designation: Assistant professor

Subject: Chemistry (Organic Chemistry)

Class: B.Sc. III (medical), semester-VI

Subject/Paper: Sr. No.	Months	Topics to be covered	Remarks if any,

1	April	Phase Equilibrium Statement and meaning of the terms – phase, component and degree of freedom, thermodynamic derivation of Gibbs phase rule, phase equilibria of one component system	
2	May	–Example – water system. Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilverisation of lead class test of this chapter	
3	June	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	
4	July	Silicones and Phosphazenes Nomenclature, classification, preparation and uses of silicones, elastomers, polysiloxane copolymers, poly phosphazenes and bonding in triphosphazene. Revision of syllabus.	

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Gurdeep

P.I.G. GOVT. COLLEGE FOR WOMEN, JIND
LESSON-PLAN (Session 2021- 2022) EVEN SEMESTER

Name of Teacher: Mr. Ravi Kumar

Designation: Assistant Professor

Subject: Chemistry

Class: B.Sc. III (Non. Medical) & (Medical), Inorganic chemistry Semester-VI

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	April	<p>Acids and Bases Arrhenius, Bronsted-lowry, Lux-flood, solvent system and Lewis concept of acids and bases, relative strength of acids and bases, levelling solvents, hard and soft acids and bases(HSAB), Applications of HSAB principle.</p> <p>Organometallic chemistry Definition, classification and nomenclature of organometallic compounds, preparation, properties and bonding of alkyls of Li</p> <p>Class test of this chapter and one assignment.</p>	
2	May	preparation, properties and bonding of alkyls of Al, Hg and Sn, concept of hapticity of organic ligand, Structure and bonding in metal-ethylenic complexes, Structure of Ferrocene, classification in metal carbonyls, preparation, properties and bonding in mononuclear carbonyls.	

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3	June	<p>Silicones and Phosphazenes Nomenclature, classification, preparation and uses of silicones, elastomers, polysiloxane copolymers, poly phosphazenes and bonding in triphosphazene.</p> <p>Bio inorganic chemistry Metal ions present in biological system, classification on the basis of action (essential, non essential, trace, toxic)</p>	
4	July	<p>Metalloporphyrins with special reference to haemoglobin and myoglobin. Biological role of Na^+, K^+, Ca^{2+}, Mg^{2+}, Fe^{2+} ions, Cooperative effect, Bohr effect.</p> <p>Class test of this chapter and one assignment.</p>	

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P.I.G. GOVT. COLLEGE FOR WOMEN, JIND
LESSON-PLAN (Session 2021-2022) EVEN SEMESTER

Name of Teacher: Mr. Ravi Kumar

Designation: Assistant Professor

Subject: Chemistry

Class: B.Sc. III Medical +Non medical , Organic chemistry semester VI

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	April	Heterocyclic Compounds Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine	
2	May	, piperidine and pyrrole. Introduction to condensed five and six- membered heterocycles. Preparation and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis, Skraup synthesis and Bischler-Napieralski synthesis. Mechanism of electrophilic substitution reactions of, quinoline and isoquinoline. Amino Acids, Peptides & Proteins Classification, of amino acids. Acid-base behavior, isoelectric -amino acids. α point	

		and electrophoresis.	
3	June	Preparation of Structure and nomenclature of peptides and proteins Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis, solid-phase peptide synthesis. Structures of peptides and proteins: Primary & Secondary structure.	
4	July	<p>Synthetic Polymers Addition or chain-growth polymerization. Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers. Condensation or step growth polymerization. Polyesters, polyamides, phenol formaldehyde resins. Natural and synthetic rubbers.</p> <p>Revision</p> <p>Class test of this chapter.</p> <p>Unit test and assignment will be taken in June</p>	

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P.I.G. GOVT. COLLEGE FOR WOMEN, JIND
LESSON-PLAN (Session 2021-2022) EVEN SEMESTER

Name of Teacher: Mr. Ravi Kumar

Designation: Assistant Professor

Subject: Chemistry

Class: B.Sc. Ist Non medical , Organic chemistry semester II

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	April	<p>Alkenes Nomenclature of alkenes, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halide. The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. mechanisms involved in—Chemical reactions of alkenes hydrogenation, electrophilic and free radical additions</p>	
2	May	<p>, Markownikoff's rule, hydroboration-oxidation, oxymercurationreduction,ozonolysis, hydration, hydroxylation and oxidation with $KMnO_4$.</p> <p>Arenes and Aromaticity Nomenclature of benzene derivatives: Aromatic nucleus and side chain. Aromaticity: the Huckel rule, aromatic ions, annulenes up to 10 carbon atoms, aromatic, anti-aromatic and non-aromatic compounds. general pattern of</p>	

		the—Aromatic electrophilic substitution mechanism, mechanism of nitration, halogenation, sulphonation,	
3	June	and Friedel-Crafts reaction. Energy profile diagrams. Activating, deactivating substituents and orientation. Dienes and Alkynes Nomenclature and classification of dienes: isolated, conjugated and —cumulated dienes. Structure of butadiene. Chemical reactions 1,2 and 1,4 additions (Electrophilic & free radical mechanism)	
4	July	Diels-Alder reaction, Nomenclature, structure and bonding in alkynes. Methods of formation. Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation of alkynes.	

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Gurdeep

P.I.G. GOVT. COLLEGE FOR WOMEN, JIND
LESSON-PLAN (Session 2022) EVEN SEMESTER

Name of Teacher: Mr. Gurdeep Sidhu

Designation: Assistant Professor

Subject: Chemistry

Class: B.Sc. III (Non. Medical) & (Medical), Semester-VI

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1	April	<p>Solutions, Dilute Solutions and Colligative Properties Ideal and non-ideal solutions, methods of expressing concentrations of solutions, Dilute solutions, Raoult's law. Colligative properties: (i) relative lowering of vapour pressure (ii) Elevation in boiling point (iii) depression in freezing point (iv) osmotic pressure. Thermodynamic derivation of relation between amount of solute and elevation in boiling point and depression in freezing point.. Applications in calculating molar masses of normal, dissociated and associated Solutes in solution. Class test of this chapter and one assignment.</p>	
2	May	<p>Phase Equilibrium Statement and meaning of the terms – phase, component and degree of freedom, thermodynamic derivation of Gibbs phase rule, phase equilibria of one component system –Example – water system. Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilverisation of lead. Class test of this chapter.</p>	

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3	June	<p>Photochemistry Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of photochemistry: Grotthus-Draper law, Stark-Einstein law (law of photochemical equivalence), 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).</p>	
	July	<p>Introduction to statistical mechanics Need for statistical thermodynamics, thermodynamic probability, Maxwell Boltzmann distribution statistics, Born oppenheimer approximation, partition Function and its physical significance. Factorization of partition function.</p> <p>Class test of this chapter and one assignment.</p>	

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P.I.G. GOVT. COLLEGE FOR WOMEN, JIND
 LESSON-PLAN (Session 2022) EVEN SEMESTER

Name of Teacher: Mr. Gurdeep Sidhu

Designation: Assistant Professor

Subject: Chemistry

Class: B.Sc. II Medical, Organic Chemistry / Inorganic Chemistry

Subject/Paper : Sr. No.	Months	Topics to be covered	Remarks if any,
1 <i>Organic Chemistry</i>	April	Infrared spectroscopy Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region,.	
2 	May	characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds. Applications of IR spectroscopy in structure elucidation of simple organic compounds	
3 <i>Inorganic Chemistry</i>	June	Theory of Qualitative and Quantitative inorganic Analysis Chemistry of analysis of various groups of basic and acidic radicals. Chemistry of identification of acid radicals in typical combinations Chemistry of interference of acid radicals including their removal in the analysis of basic radicals Class test and assignment	
4 	July	Theory of Qualitative and Quantitative inorganic Analysis Theory of precipitation Co-precipitation post-precipitation, purification of precipitates	

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