Lesson Plan (April 2021 - July2021)

Name of Assistant Professor: Ms. Meenakshi Nirman
Subject: Inorganic Chemistry
Class: B.Sc. II (IV SEM)

S.N	Month	Week	Topic
1.	April	I	Introduction to Chemistry of f-block elements, Introduction to Lanthanide
		II	Lanthanides: Electronic structure, oxidation states,
		III	Ionic radii and Lanthanides contraction
		IV	Complex formation
		V	Occurrence and isolation of Lanthanides
2.	May	I	Isolation of Lanthanides
		II	Lanthanide compounds
		III	Actinides: General features and chemistry of actinides
		IV	Chemistry of separation of Np, Pu, and Am from U,
		V	Chemistry of separation of Np, Pu, and Am from U,
3.	June	I	Comparison of properties of Lanthanides and Actinides and with transition elements
		II	Theory of qualitative and quantitative analysis-1
		III	Chemistry of analysis of various acidic radicals

4.	June July	IV V I II III IV	Chemistry of identification of acid radicals in typical combination, Chemistry of analysis of various basic radicals Chemistry of interference of acid radicals including their removal in the analysis of basic radicals Common ion effect, solubility product Theory of precipitation, theory of post-precipitation Purification of precipitation

Lesson Plan (April 2021 - July2021)

Name of Assistant Professor: Ms. Meenakshi Nirman

Subject: Inorganic Chemistry

Class: B.Sc. I (II SEM)

S.N	Month	Week	Topic
1.	April	I	Hydrogen Bonding, Vander Waal's forces, Metallic Bonds, Semiconductors
		II	S-Block elements, Comparative study of the elements including diagonal relationship Anomalous behaviour of Lithium and Berylium compared to other elements in the same group,
		III	Salient features of hydrides, oxides halides, hydroxides
		IV	Behaviour of solution in liquid ammonia, Introduction to Chemistry of noble gases, general physical properties
		V	Low chemical reactivity, chemistry of xenon, Structure and bonding in fluorides
2.	May	I	Structure and bonding in Oxides and oxyflourides of xenon
		II	P-block elements, electronic configuration, atomic and ionic size definition, methods of determination or evaluation, trend in periodic table (in s and p-block elements)
		III	Metallic character, melting point, ionization energy,
		IV	Electron affinity, electronegativity, inert pair effect, and diagonal relationship Boron family: Diborane: preparation, properties and structure
		V	Diborane structure, Structure and bonding in fluorides
3.	June	I	Borazine: chemical properties and structure
		II	Relative strength of trihalides of Boron as Lewis acids, structure of aluminium chloride
		III	Carbon family and Nitrogen family: Catenation, carbides, fluorocarbons, silicates Oxides:

4.	June	IV	Structure of oxides of nitrogen and phosphorus, oxyacids
		V	Structure and relative strength of oxy acids of nitrogen
	July	I	Structure and relative strength of oxy acids of phosphorus
		II	Structure of white and red phosphorus
		III	Halogen Family: interhalogen compounds: properties and structure
		IV	Hydra and oxy acids of chlorine- structure and comparison of acid strength Cationic nature of iodine

Lesson Plan (April 2021 - July2021)

Name of Assistant Professor: Ms. Meenakshi Nirman
Subject: Inorganic Chemistry
Class: B.Sc. III (VI SEM)

S.N	Month	Week	Topic
1.	April	I	Introduction to Acid Bases: Different concepts of acid and bases
		II	Arrhenius, Bronsted-Lowry concepts of acids and bases
		III	Solvent system and Lewis concept of acids and bases
		IV	Relative strength of acids and bases
		V	Leveling solvents
2.	May	I	Hard and soft acids and Bases,
		II	Applications of HSAB principle
		III	Organometallic compounds -Classification,
		IV	Nomenclature Organometallic compounds,
		V	Nature of bonding,
3.	June	I	Metal carbonyl- Bonding and nomenclature
		II	Bioinorganic chemistry: role of metal ions in biological system,
		III	Metalloporphyrin, nitrogen fixation, uses

	June	IV	Silicones: Classification,
		V	Nomenclature, Nature of bonding
	July	I	Phosphozenes: Classification, Nomenclature, Nature of bonding, uses
		II	Phosphozenes: Classification, Nomenclature, Nature of bonding, uses
		III	Phosphozenes: Classification, Nomenclature, Nature of bonding, uses
		IV	Phosphozenes: Classification, Nomenclature, Nature of bonding, uses

Lesson Plan (April 2021 - July2021)

Name of Assistant Professor: Ms. Meenakshi Nirman
Subject: Organic Chemistry
Class: B.Sc. II (IV SEM)

S.N	Month	Week	Topic
1.	April	I	Introduction to Infrared (IR) absorption spectroscopy
		II	Molecular vibrations, Hooke's law,
		III	Selection rules, intensity and position of IR bands,
		IV	Measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds.
		V	Applications of IR spectroscopy in structure elucidation of simple organic compounds.
2.	May	I	Amines Structure and nomenclature of amines, physical properties.
		II	Separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines.
		III	Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds.
		IV	Gabrielphthalimide reaction, Hofmann bromamide reaction. Electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.
		V	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 application.
3.	June	I	Aldehydes and Ketones Nomenclature and structure of the carbonyl group.
		II	Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides,

4.	June July	III IV V I II III IV	Advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate. Physical properties, 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 reductions.