GOVT. P.G. COLLEGE FOR WOMEN, SECTOR-14, PANCHKULA

LESSON-PLAN (Session 2024-2025) EVEN SEMESTER

Name of Professor: **Ms. Balwinder Kaur**
Designation: **Assistant Professor**
Subject: **Chemistry**
Class: **B.Sc 6th sem Med & Non -Medical**
Subject/Paper: **(Inorganic Chemistry)**

Months	**Topics to be covered**	Learning outcomes of the student	**Teaching learning Strategy**	Remarks if any
JAN	**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.	Learn the basic concept of Acid base theory.Learn the hard and soft acids and bases	Group learning and teaching	Assignment -1
FEB	**Organometallic chemistry** Definition, classification and nomenclature of organometallic compounds, preparation, properties and bonding of alkyls of Li, 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.	After completing this course, the learner will be able to:. Aware about organometallic chemistry and the uses of metal carbonyls.	Group learning and teaching& Learning through problem solving	Assignment -2 Test
MAR	**Bio inorganic chemistry** Metal ions present in biological system, classification on the basis of action (essential, non essential, trace, toxic),	Learn about Metal ions present in biological system.	Group learning and teaching & Learning through problem solving	
April	Metalloporphyrins with special reference to haemoglobin and myoglobin. Biological role of Na+, K+, Ca+2, Mg+2, Fe+2 ions,Cooperative effect, Bohr effect. of silicones, elastomers	Learn about Metal ions present in biological system.	Group learning and teaching	REVISION
May	**Exam**			

GOVT. P.G. COLLEGE FOR WOMEN, SECTOR-14, PANCHKULA

LESSON-PLAN (Session 2024-2025) Even Semester

Name of Professor: **Mr. Rakesh**
Designation: **Assistant Professor**
Subject: **Chemistry(Physical Chemistry)**
Class: **B.Sc 6th Sem(Non-Med and Med)**

Months	**Topics to be covered**	**Learning outcomes of the student**	**Teaching learning Strategy**	Remarks if any
JAN	**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. **Photochemistry** Interaction of radiation with matter, difference between thermal and Photochemical processes. Laws of photochemistry: Grotthus-Drapper law,	Student will able to find connection between statistics and thermodynamics And they will be able to explain the behaviour of the systems	Group learning and teaching& Problem based learning	**Assignment -1**
FEB	Stark-Einstein law (law of photochemical equivalence), Jablonski diagram depiciting 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). **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	Students formulate the macroscopic and quantum laws of the absorption of light by molecules and solids	Group learning and teaching& Practical based learning.Problem based learning, Interactive learning	**Test**
MAR	(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. **Phase Equillibrium:**Statement and meaning of the terms – phase, component and degree of freedom, thermodynamic derivation of Gibbs phase rule, phase equilibria of one componentsystem – Example – water system.Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilverisation of lead.	Students will able to describe the effect of solute concentration on various solution properties. They will learn the osmosis process and how it is applied industrially	Group learning and teaching Problem based learning, Interactive learning	**Assignment -2 Test**
APR	phase equilibria of one componentsystem –Example – water system.Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilverisation of lead	Students will anle to describe quantitatively equilibrium states using phase diagrams	Group learning and teaching,Interactive learning	**Revision and Tests**
MAY	**Revision and Tests**			

GOVT. P.G. COLLEGE FOR WOMEN, SECTOR-14, PANCHKULA

LESSON-PLAN (Session 2023-2024) EVEN SEMESTER

Name of Professor: **Dr. Rani Jindal**
Designation: **Extension lecturer**
Subject: **Chemistry**
Class: **B.Sc 6th sem Non Medical/Med**
Subject/Paper: **(Organic Chemistry)**

Months	**Topics to be covered**	**Teaching learning Strategy**	Remarks if any
February	**Organic Synthesis *via* Enolates:** Acidity of hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen-condensation. Keto-enol tautomerism of ethyl acetoacetate. **Heterocyclic Compounds:** Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with pa rticular emphasi s on the mechani sm of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrole. **Assignment -1**	Group learning and teaching& Problem based learning	**Assignment -1**
March	**Heterocyclic Compounds:** Introduction to condensed five and six- membered heterocycles. Prepration 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. **Assignment -2 & Test**	Group learning and teaching& Practical based learning.Problem based learning, Interactive learning	**Test**
April	**Amino Acids, Peptides& Proteins:** Classification, of amino acids. Acid-base behavior, isoelectric point and electrophoresis. Preparation of amino acids. 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. **Synthetic Polymers:** Addition or chain-growth polymer ization. Free radical vinyl polymer ization, ionic vinyl polymerizat ion, Ziegler –Natta polymerization and vinyl polymers. **Test**	Group learning and teaching Problem based learning, Interactive learning	**Assignment -2 Test**
May	Condensation or step growth polymerization. Polyesters, polyamides, phenol formaldehyde resins. Natural and synthetic rubbers. **Revision**	Group learning and teaching,Interactive learning	**Revision and Tests**

GOVT. P.G. COLLEGE FOR WOMEN, SECTOR-14, PANCHKULA

LESSON-PLAN (Session 2024-25) EVEN SEMESTER

Name of Teacher: **Pooja Girotra**

Designation: **Extension Lecturer**

Class: **B.A/B.Sc. VI Sem**

Subject/ Paper: **Dynamics**

S. No.	Month	Topics to be covered	Teaching Learning Strategy	Learning Outcomes of Students	Remarks
1.	**February**	Velocity and acceleration along radial, transverse, tangential and normal directions. Relative velocity and acceleration. Simple harmonic motion. Elastic strings.	**1. Learning through Problem Solving** **2. Group-Learning & Teaching**	Gain knowledge of the concepts of Velocity and acceleration along radial, transverse, tangential and normal directions	
2.	**March**	Mass, Momentum and Force. Newton's laws of motion. Work, Power and Energy. Definitions of Conservative forces and Impulsive forces	**1. Learning through Problem Solving** **2. Group-Learning & Teaching**	Have knowledge of the concepts used in solving problems based on Mass, Momentum and Force. Newton's laws of motion. Work, Power and Energy. Definitions of Conservative forces and Impulsive forces	
3.	**April**	Motion on smooth and rough plane curves. Projectile motion of a particle in a plane. Vector angular velocity.	**1. Learning through Problem Solving** **2. Group-Learning & Teaching**	Gain knowledge Motion on smooth and rough plane curves. Learning Projectile motion of a particle in a plane. Vector angular velocity.	

4.	**May**	General motion of a rigid body. Central Orbits, Kepler laws of motion. Motion of a particle in three dimensions. Acceleration in terms of different co-ordinate system	**1. Learning through Problem Solving** **2. Group-Learning & Teaching**	Have knowledge of concepts, facts, principles and theories General motion of a rigid body. Central Orbits, Kepler laws of motion. Motion of a particle in three dimensions. Acceleration in terms of different co-ordinate system. Attain cognitive skills used in solving various problems	

- **Seminar/Presentation/Assignment/Quiz/Class Test /Mid-Term Exam will be taken as per schedule.**

Signature of Teacher **Principal**

Lesson Plan for Physics B.Sc (N.M)

Class :- BSc 3rd year

Sem:- VI

Subject :- Atomic and Solid state

Teacher :- Aman Kumar

Month	Syllabus Covered	Outcome
January	PH-602: Introduction to atomic spectroscopy, Emission and absorption spectra, Atomic spectra, Hydrogen spectrum (Balmer series, Bohr model). PH-601: Crystalline and glassy forms, Liquid crystals, Crystal structure, Lattice and basis, Bravais lattices, Crystal planes and Miller indices.	Understanding fundamental concepts of spectroscopy and crystal structures. Learning about atomic models and crystallography.
February	PH-602: Spectral series in Hydrogen atom, Effect of nuclear motion on spectral lines, Rydberg constant variation, Bohr-Sommerfeld theory. PH-601: X-ray diffraction, Bragg's Law, Reciprocal lattice, Simple cubic, b.c.c., and f.c.c. structures.	Grasping advanced atomic structure concepts and their experimental implications. Understanding X-ray diffraction and lattice structures.
March	PH-602: Vector atom model, Space quantization, Electron spin, Coupling of orbital and spin angular momentum, Hydrogen fine spectra, Alkali spectra. PH-601: Introduction to superconductivity, Classification of superconductors, Meissner effect, London theory, BCS theory, Josephson effect.	Learning quantum mechanical aspects of atomic structure. Understanding superconductivity, its classifications, and technological applications.
April	PH-602: Zeeman effect (normal and anomalous), Experimental setup,	Understanding magnetic effects on atomic spectra and quantum transitions.

	Zeeman pattern of D1 and D2 lines of Na-atom, Paschen-Back effect, Stark effect of Hydrogen atom. PH-601: Introduction to Nano Physics, Importance of nanotechnology, History, Molecular assembler concept, Applications in various fields.	Exploring nanotechnology, its significance, and applications.

GOVT. P.G. COLLEGE FOR WOMEN, SECTOR-14, PANCHKULA

LESSON-PLAN (Session 2024-25) EVEN SEMESTER

Name of Teacher: **Dr Surender Singh**

Designation: **Professor**

Class: **B.Sc VI Sem**

Subject/ Paper: **Zoology**

S. No.	Month	Topics to be covered	Teaching Learning Strategy	Learning Outcomes of Students	Remarks
1.	January 2025	Introduction to world fisheries: Production, utilization and demand. Fresh Water fishes of India:River system, reservoir, pond, tank fisheries; captive and culture fisheries, cold water fisheries.	Group Learning & Teaching	Students will be able to get basic knowledge of Fisheries	
2.	February 2025	Fishing crafts and gears. Fin fishes, Crustaceans, Molluscs and their culture. Study of important insect pests of crops and vegetables	Group Learning & Teaching	Students will be able to get basic knowledge of Fisheries and Pests	
3.	March 2025	Seed production Nutrition Field Culture Culture technology	Group Learning & Teaching	Students will be able to study different procedures related to Fisheries	

4.	**April & May2025**	**Pest of stored grains** **Insect control** **Chemical control** **IPM** **Important Bird and Rodent Pests**	**Group Learning & Teaching**	**Students will be able to get detailed knowledge related to IPM and Pests**	

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Signature of Teacher **Principal**

Govt. P.G. College For Women, Sec-14, Panchkula

Lesson Plan (2024-25) Even Semester

Name Of The lecturer: Ms. Teena Aggarwal

Designation: Extension Lecturer in Botany

Class : B.Sc. III (Medical)

Subject: Botany

Subject/Paper: Paper I: Biochemistry and Plant Biotechnology

Paper II: Economic Botany

Sr. No.	Months	Topics To Be Covered	Teaching Learning Stratedy	Learning Outcomes of Students	Remarks
1	**January**	**B.Sc III (Medical)- Paper I,** **Unit I Basics of Enzymology**: Discovery and nomenclature; characteristics of enzymes, Concept of holoenzyme, apoenzyme, Coenzyme and Co-factors; regulation of enzyme activity; mechanism of action. **Growth and development:** Definitions; phases of growth and development; Plant hormones- auxins, gibberellins, cytokinins, abscissic acid and ethylene, history of their discovery, mechanism of action;photo-morphogenesis, phytochromes and their discovery, physiological role and mechanism of action.	Group learning and teaching, Demonstation by practicals.	Students will acquire an understanding of the Basics of Enzymology and concept of growth and development, about various hormones and its role and mechanism.	Revision of class work on daily basis.
2	**February**	**UNIT-I Lipid metabolism**: Structurc and functions of lipids; fatty acid biosynthesis; B-oxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids. **UNIT-II Nitrogen metabolism** : Biology of nitrogen fixation; importance of nitrate reductase and its regulation, ammonium assimilation.	Research learning, Presentation methodology	Students will develop comprehensive knowledge about lipid metabolism and nitrogen metabolism.	Revision of metabolic processes. Assignme nt-I
3	**March**	**Genetic engineering and Biotechnology** Tools and techniques of recombinant DNA technology, cloning vectors, genomic and cDNA	Group learning and teaching, Presentation methodology	Students will gain a deep understanding of genetic engineering and biotechnology and	Assignme nt-II Class-Test

		library, transposable elements; aspects of plant tissue culture: cellular totipotency, differentiation and morphogenesis; biology of Agro-bacterium; Vectors for gene delivery and marker genes. **Paper – II Economic Botany** **UNIT-I** Origin, distribution, botanical description, brief idea of cultivation and uses of the following**:** **Food plants-Cereals (**Rice, Wheat and Maize). **Pulses- (**Gram, Arhar and Pea). **Vegetables-** (Potato, Tomato and Onion). **Fibers-** Cotton, Jute and Flax. **Oils**- Groundnut, Mustard and Coconut.		description of various cereals, pulses, vegetables, fibers and oils.	
4	**April**	**UNIT-II** Morphology of plant part used, brief idea of cultivation and uses of the following: **Spices-** Coriander. Ferula, Ginger, Turmeric, Cloves. **Medicinal Plants**- Cinchona, Raunolfia, Atropa, Opium, Cannabis, Neem. Botanical description and processing of: **Beverages**- Tea and Coffee. **Rubber**- Hevea. **Sugar-** Sugarcane. General account and sources of timber; energy plantations and bio-fuels.	Interactive learning Presentation methodology	Students will be able to learn morphology of spices, medicinal plants, beverages, rubber, sugar.	Class-Test

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Signature of Teacher Principal

Govt. P.G. College For Women, Sec-14, Panchkula

Lesson Plan (2024-25) Even Semester

Name Of The lecturer: Ms. Teena Aggarwal

Designation: Assistant Professor (Ext.) in Botany

Class : B.Sc. III (Medical)

Subject: Genetics

Subject/Paper: Paper XI: Genetics & Crop improvement-I

Paper XII Genetics & Animal Improvement-II

Sr. No.	Months	Topics To Be Covered	Teaching Learning Stratedy	Learning Outcomes of Students	Remarks
1	**January**	**B.Sc III (Medical)-** Paper - XI (Genetics & Crop improvement-I SECTION -A I **Polyploidy in Plant Breeding**: Autopolyploidy and allopolyploidy, their application in crop improvement and origin of crop plants, Colchicine induced polyploidy and limitation of polyploidy. **II New Approach to Breeding of Self Pollinated Crops:** Multi-line varieties, their merits, demerits and achievements, Population approach, Its merits and demerits. **III Biotechnology in Crop Improvements:** A brief account of plant tissue culture-technique, embryo culture, meristem culture, anther culture, somatic hybridization, achievements and future prospects.	Group learning and teaching, Demonstation by practicals.	Students will acquire an understanding of the Basics of Polyploidy in Plant Breeding and concept of Approach to Breeding of Self Pollinated Crops , about uses of Biotechnology in Crop Improvements.	Revision of class work on daily basis.
2	**February**	**SECTION-B** **IV :Varietal Release and Seed Production**: Evaluation: Station trial, Multi-location trial, Disease and Insect Tests, Quality Test and identification of entries for release **V Certified Seed**: Introduction, requirement for certified seeds, certified seed production in some crops, self pollinated crops, Hybrid Maize, Hybrid Jawar, Hybrid bajra and potato.	Research learning, Presentation methodology	Students will develop comprehensive knowledge about Varietal Release and Seed Production, Certified Seed, Research Centers and Plant Breeder's Rights (PBR).	Revision of seeds and Research Centres. Assignment-I

		VI Brief Account of the following: **Research Centres:** International Rice Research Institutes (IRRI), Sugarcane Breeding Institution (SBI), Central Potato/Research Institute (CPRI), Central Institute of Cotton Research(CICR), International Centre for Improvements of Maize and Wheat(CIMMYT). **VII Plant Breeder's Rights (PBR):** Historical, Requirements of PBR, Farmer's Right, need for PBR, Benefits from PBR, Disadvantages from PBR.			
3	**March**	**Paper - XII (Genetics & Animal Improvement-II)** **SECTION-A** **I. Breeds of Live Stock:** A brief account of important indigenous and exotic breeds of dairy cattle, Sheep, Goat, Swine and poultry. **II. Animal Genetics Resources:** Live Stock, Poultry and fish genetic resources in India and their conservation strategies. **IlI .Sire Evaluation:** Introduction, Sire Indexing, Daughter average index, Correlated daughter average index, contemporary daughter average index.	Group learning and teaching, Presentation methodology	Students will gain a deep understanding of . Breeds of Live Stock, Animal Genetics Resources, Sire Evaluation.	Assignment-II Class-Test
4	**April**	**SECTION-B IV. Biotechnology for the improvement of animals:** Frozen semen and artificial insemination, Embryo manipulation, Gene targeting and transgenesis, Sex selection **V Exsitu Cryopreservation of Animal Genetic Resources:**. Cryopreservation of embryos, Insemination and flushing of embryos, Cryopreservation of ovaries, Conservation of genetic material **VI Brief account of the following:** **Animal Research Centers:** National	Interactive learning Presentation methodology	Students will be able to learn Biotechnology for the improvement of animal, Exsitu Cryopreservation of Animal Genetic Resources, Animal Research Centers, Intellectual Property Right (IPRs) and Patents.	Class-Test

		Bureau of Animal Genetic Resources (NBAGR), National DiaryResearch Institute (NDRI), Indian Veterinary Research Institute (IVRI) **VII Intellectual Property Right (IPRs) and Patents:** Introduction, Process Patent, Product patent, non patentable inventions, A patents-classical cases			

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