

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year - 2022-23

Sem. I, III, V

Department- Chemistry

Name of the Teacher - Dr. Undale K. A.

Month - September					
B.Sc.I Sem I					
Lectures	Practicals	Total	Module Unit	Sub-Units Planned	
--	16	16			
B.Sc.II Sem III :- Course Title:- Physical and Analytical Chemistry					
Lectures	Practicals	Total	Module Unit	Sub-Units Planned	
04	32	36	Phase Equilibria	Introduction, Phase, components and degrees of freedom of a system, criteria of phase equilibrium, Gibbs Phase Rule, Clausius-Clapeyron equation and its importance,	
B.Sc.III.Sem V:- Course Title:- Physical and Analytical Chemistry					
Lectures	Practicals	Total	Module Unit	Sub-Units Planned	
08	28	36	Molecular Spectroscopy	Introduction, Electromagnetic radiations, Electromagnetic spectrum, Energy level diagram. Rotational spectra of diatomic molecules: Rigid rotor model, Moment of inertia (derivation expected), Energy levels of rigid rotor, selection rules, spectral intensity, Maxwell-Boltzmann population distribution, Determination of bond length, isotopic effect, interaction of radiation with rotating molecules.	
M. Sc. II Sem III :- Course Title:- Organic Reaction Mechanism					
Lectures	Practicals	Total	Module Unit	Sub-Units Planned	
04	--	04	Pericyclic Reactions	Molecular orbital symmetry, Frontier orbital of ethylene, 1,3-butadiene, 1,3,5-hexatriene and allyl system,	


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Month – November

B.Sc.I Sem I

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
--	16	16		

B.Sc.II Sem III :- Course Title:- Physical and Analytical Chemistry

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	32	36	Solutions	Thermodynamics of ideal solutions: Ideal solutions and Raoult's law, deviations from Raoult's law, non-ideal solutions, Vapour pressure-composition and temperature composition curves of ideal and non-ideal solutions, Distillation of solutions, Azeotropes,

B.Sc.III. Sem V:- Course Title:- Physical and Analytical Chemistry


Lectures	Practicals	Total	Module Unit	Sub-Units Planned
08	28	36	Chromatography	Paper Chromatography: Principle, methodology, types of Papers and treatment, sample loading, choice of solvent, development: ascending, descending, circular; location of spot, determination of R _f value, applications and Advantages and Disadvantages. Thin layer chromatography: principle, solvent system, stationary phases, preparation of TLC plates, detecting reagents, methodology-sample loading, development, detection of spot, determination of R _f value, preparative TLC, applications and Advantages and Disadvantages. Comparison of TLC and paper chromatography.

M. Se. II Sem III :- Course Title:- Organic Reaction Mechanism

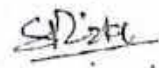
Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	--	04	Pericyclic, Reactions	1,3-dipolar cycloaddition and chelotropic reactions, sigmatropic rearrangement, supra and antarafacial shifts of H,


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Month – December					
B.Sc.I Sem I					
Lectures	Practicals	Total	Module Unit	Sub-Units Planned	
--	16	16			
B.Sc.II Sem III :- Course Title:- Physical and Analytical Chemistry					
Lectures	Practicals	Total			
04	32	36	Phase Equilibria Solutions	Numericals Unit Test	
B.Sc.III.Sem V:- Course Title:- Physical and Analytical Chemistry					
Lectures	Practicals	Total			
08	28	36	Synthetic Reagents	DDQ, OsO ₄ , N-bromosuccinamide, Zn-Hg, DCC, LiAlH ₄ , CAN, Raney Ni, Diazomethane Unit Test	
M. Sc. II Sem III :- Course Title:- Organic Reaction Mechanism					
Lectures	Practicals	Total			
04	--	04	Pericyclic Reactions	Sigmatropic shifts involving carbon moieties, (3,3) and (5,5) sigmatropic rearrangement and Claisen and Cope and Aza Cope rearrangement, Ene reaction. Unit Test	


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Dr. Mrs. S. D. Shirke
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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year - 2022-23

Sem. II, IV, VI

Department- Chemistry

Name of the Teacher – Dr. Undale K. A.

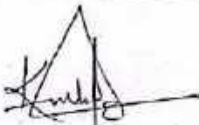
Month – February				
B.Sc.I Sem I Physical Chemistry				
Lectures	Practicals	Total	Module Unit	Sub-Units Planned
08	16	24	Chemical Equilibria	Introduction, Concept of free energy, Free energy change in chemical reaction, law of chemical equilibrium, Distinction between Gibbs free energy and standard Gibbs free energy, LeChatelier's Principle
B.Sc.II Sem III :-				
Lectures	Practicals	Total		
--	32	32		
B.Sc.III Sem V:- Course Title:- Physical and Analytical Chemistry				
Lectures	Practicals	Total		
04	28	32	Renewable Energy Sources	Introduction, Batteries -Primary, Secondary cells, Lithium Ion Cell, Fuel Cells- Types of fuel cells, Hydrogen- Oxygen fuel cell, Hydrocarbon - Oxygen fuel cell, Coal fired fuel cell.
M. Sc. II Sem III :- Course Title:- Organic Reaction Mechanism				
Lectures	Practicals	Total		
04	--	04	Newer methods of stereoselective synthesis	Introduction, Stereoselective, Stereospecific Reactions

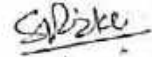
Month – March				
B.Sc.I Sem I Physical Chemistry				
Lectures	Practicals	Total	Module Unit	Sub-Units Planned
08	16	24	Chemical Equilibria	Conditions for maximum yield in industrial processes like manufacture of ammonia and sulphuric acid. Relationship between K_p , K_c and K_x for reactions involving ideal gases.

B.Sc.II Sem III				
Lectures	Practicals	Total		
	32	32		
B.Sc.III.Sem V:- Course Title:- Physical and Analytical Chemistry				
Lectures	Practicals	Total		
04	28	32	Renewable Energy	Biomass Energy - Introduction, Origin of biomass, conversion of biomass into energy by alcohol fermentation and anaerobic digestion method.
M. Sc. II Sem III :- Course Title:- Organic Reaction Mechanism				
Lectures	Practicals	Total		
04	--	04	Newer methods of stereoselective synthesis	Enantioselective synthesis (chiral approach) reactions with hydride donors, hydroboration, catalytic hydrogenation

Month - April				
B.Sc.I Sem I:- Course Title:- Analytical And Industrial Chemistry				
Lectures	Practicals	Total	Module Unit	Sub-Units Planned
08	16	24	Dairy Chemistry	Introduction, Constituents of Milk and their Physicochemical Properties, Milk Processing
B.Sc.II Sem III				
Lectures	Practicals	Total		
	32	32		
B.Sc. III Sem V:- Course Title:- Physical and Analytical Chemistry				
Lectures	Practicals	Total		
04	28	32	Fermentation Industry	Introduction, importance, Basic requirement of fermentation process, Factors favoring fermentation operations. Manufacture of Industrial alcohol (Ethyl alcohol) from a) Molasses b) Food grains, c) manufacture of alcohol from fruits (wine).
M. Sc. II Sem III :- Course Title:- Organic Reaction Mechanism				
Lectures	Practicals	Total		
04	--	04	Newer methods of stereoselective synthesis	Catalytic hydrogenation via chiral hydrazones and oxazolines

Month – May				
B.Sc.I Sem I				
Lectures	Practicals	Total	Module Unit	Sub-Units Planned
08	16	24	Dairy Chemistry	Milk Processing, Definition & Composition of Dairy Products: Cream, Butter, Ghee, Icecream, Milk Powder
B.Sc.II Sem III				
Lectures	Practicals	Total		
	32	32		
B.Sc.III.Sem V:- Course Title:- Physical and Analytical Chemistry				
Lectures	Practicals	Total		
04	28	32	Fermentation Industry	Grades of alcohols: Silence spirit, rectified spirit, absolute alcohol, proof spirit, denatured spirit, duty and duty free alcohol. Importance of power alcohol as fuel
M. Sc. II Sem III :- Course Title:- Organic Reaction Mechanism				
Lectures	Practicals	Total		
04	--	04	Newer methods of stereoselective synthesis	Sharpless epoxidation, Diels Alder selective synthesis.


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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. I (A+B+C), Sem-I

Department: Chemistry

Subject: Chemistry

Course Title: DSC-1002A: Inorganic & Organic Chemistry

Name of the Teacher: Dr. Sanjay Shivram Ankushrao

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	Induction	<ul style="list-style-type: none"> • General Introduction • Discussion on Course Structure • Discussion on Examination pattern • Discussion on Syllabus
06	-	06		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemical Bonding and Molecular structure -Ionic Bonding	<ul style="list-style-type: none"> • General introduction • Types of Bond • Formation of ionic Solid • Factors Governing to Formation of ionic Solid
12	16	28		
Month: October			Module/Unit:	Sub-units planned
12	16	28	Chemical Bonding and Molecular structure -Ionic Bonding	<ul style="list-style-type: none"> • Born-Haber Cycle • Applications of Born-Haber Cycle • Fajan's Rule • Applications of Fajan's rule • % of Covalent Character in Ionic Comp.
Month: November			Module/Unit:	Sub-units planned
12	16	28	Chemical Bonding and Molecular structure-Valence bond theory (VBT)	<ul style="list-style-type: none"> • Valence Bond Theory: Introduction, Assumptions, Applications and Limitations. • Concept of hybridization, different types of hybridization and geometry of molecule. • Linear geometry BeCl_2 (sp hybridization) • Planer trigonal geometry BF_3 (sp^2 hybridization) • Tetrahedral geometry SiCl_4 (sp^3 hybridization)
Month: December			Module/Unit:	Sub-units planned
06	08	14	Chemical Bonding and Molecular structure-Valence bond theory (VBT)	<ul style="list-style-type: none"> • Trigonal bipyramidal geometry PCl_5 (sp^3d hybridization) • Octahedral geometry SF_6 (sp^3d^2 hybridization) • Pentagonal bipyramidal geometry (IF_7) (sp^3d^3 hybridization) • Valence Shell Electron Pair Repulsion (VSEPR) Theory H_2O, ClF_3, ICl_4^-

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. II, Sem-III

Department: Chemistry

Subject: Chemistry
Chemistry

Course Title: DSC-1002D: Physical and Analytical & Industrial

Name of the Teacher: Dr. Sanjay Shivram Ankushrao

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit Operations & Unit Processes	<ul style="list-style-type: none"> Introduction, Meaning of unit operations and processes & its types.
4	-	4		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit Operations & Unit Processes	<ul style="list-style-type: none"> Distillation-Distillation of liquid mixtures, Types of distillation Types of columns, packings and Condensers, Vacuum distillation, Spinning-band distillation and Steam distillation.
4	-	04		
Month: October			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Unit Operations & Unit Processes	<ul style="list-style-type: none"> Modes of Manufacturing: Batch, Semi-batch, Continuous Study of Unit processes & unit operations involved in manufacturing of ethanol by catalytic hydration of ethylene in vapour phase.
4	-	04		
Month: November			Module/Unit:	Sub-units planned
-	-	-	-	-

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. III, Sem-V

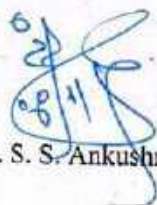
Department: Chemistry

Subject: Chemistry

Course Title: DSE-1002E1: Physical & Inorganic Chemistry
DSE-1002E2: Organic & Analytical Chemistry

Name of the Teacher: Dr. Sanjay Shivram Ankushrao

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Bio-inorganic Chemistry	<ul style="list-style-type: none"> • Introduction. • Essential and trace elements in biological process. • Metalloporphyrins with special reference to hemoglobin and myoglobin. • Biological role of alkali and alkaline earth metal ions with special reference to Na⁺, K⁺ and Ca²⁺
04	-	04		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Theory of Titrimetric Analysis	<ul style="list-style-type: none"> • Introduction • Neutralization Indicators (Acid-Base Indicators) • Theory of indicators w.r.t. Ostwald's colour change interval and Ostwald's Quinoid theory
08	28	60		
Month: October			Module/Unit:	Sub-units planned
08	28	60	Theory of Titrimetric Analysis	<ul style="list-style-type: none"> • Neutralization curves and choice of indicators for the following titration, i. Strong acid-strong base ii. Strong acid-weak base iii. Strong base - weak acid • Complexometric titration: General account • Types of EDTA titration
Month: November			Module/Unit:	Sub-units planned
08	28	60	Theory of Titrimetric Analysis	<ul style="list-style-type: none"> • Metallochromic indicators w.r.t. Eriochrome Black-T indicator
Month: December			Module/Unit:	Sub-units planned
03	14	16	Theory of Titrimetric Analysis	<ul style="list-style-type: none"> • Redox titrations: General introduction, theory of redox indicators, Use of diphenyl amine and ferroin as redox indicators


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Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. I, Sem-II

Department: Chemistry

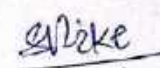
Subject: Chemistry


Course Title: CC-1140 B: Analytical Chemistry-II


Name of the Teacher: Dr. Sanjay Shivram Ankushrao

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Thermal Analysis	Introduction to thermal analysis, types of thermal analysis, significance of thermal analysis in Analytical Chemistry, effect of heat on materials, chemical decomposition, phase transformation etc. and general thermal analysis applications, advantages and disadvantages.
02	-	06		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Thermal Analysis	a) Thermogravimetry analysis (TGA): principle, instrumentation, working, types of TGA, factors influencing TGA, curve to show nature of decomposition reactions, the product and qualities of compounds expelled, TGA in controlled atmosphere, TGA curves, analysis, research and analytical implications of TGA.
04	-	12		
Month: April			Module/Unit:	Sub-units planned
04	-	12	Thermal Analysis	b) Differential thermal analysis (DTA) and differential scanning calorimetry (DSC), instrumentation, methodology, application and research implications.
Month: May			Module/Unit:	Sub-units planned
04	-	08	Thermal Analysis	Thermometric titrations method and applications
Month: June			Module/Unit:	Sub-units planned
02	-	06	Thermal Analysis	Problems: Simple problems based on TGA, DTA and DSC.


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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B. Sc. I (A+B+C), Sem-I

Department: Chemistry

Subject: Chemistry

Course Title: DSC-1002A: Inorganic and Organic Chemistry

Name of the Teacher: Dr. Mrs. Sarita Dattajirao Shinde

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Atomic Structure and Periodicity of Elements	<ul style="list-style-type: none"> • Introduction to atom • Bohr's theory of hydrogen atom and its limitations, Wave particle duality, • Heisenberg uncertainty principle,
06	-	06		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Atomic Structure and Periodicity of Elements	<ul style="list-style-type: none"> • Quantum numbers and their significance, • Shapes of s, p and d atomic orbitals, • Electrons filling rules in various orbitals: a) Aufbau's principle b) Hund's rule of maximum multiplicity c) Pauli's exclusion principle, • Electronic configuration of elements. • Stability of empty, half-filled and completely filled orbitals, • Water analysis: To determine the alkalinity of water sample by using Phenolphthaline and Methyl Orange Indicator • To prepare standard 0.1 N KMnO_4 solution and to determine the strength of given oxalic acid solutions. • To determine quantity of Fe (II) ions from the given solutions by titrating it with 0.1 N $\text{K}_2\text{Cr}_2\text{O}_7$ solutions by using internal indicator. • Estimation of amount of Acetic acid from the given vinegar sample by titrimetric method.
12	16	28		
Month: October			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Atomic Structure and Periodicity of Elements	<ul style="list-style-type: none"> • Periodicity General discussion of the following properties of the elements with reference to s block elements: a) electronic configuration b) atomic radii c) ionic radii d) ionization energy e) electron affinity f) electronegativity g) metallic characters h) reactivity i) oxidation state j) melting and boiling points • Chemical properties of the elements • Estimation of Acetamide • Estimation of Aspirin from given pharmaceutical tablet. • Bromination of phenol/aniline/acetanilide
12	16	28		
Month: November			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemical Bonding and Molecular structure (C) Molecular orbital theory (MOT)	<ul style="list-style-type: none"> • Introduction: Atomic Orbital's and Molecular Orbital's, LCAO method, formation of bonding, anti bonding and nonbonding molecular orbitals. • conditions of successful overlap, • Types of overlaps - S-S, S-P_x, P_x-P_x, P_y-P_y/ P_z-P_z overlaps.
12	16	28		

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. II, Sem-III

Department: Chemistry

Subject: Chemistry

Course Title: Chemistry Practicals

Name of the Teacher: Dr. Mrs. Sarita Dattajirao Shinde

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none"> To determine the unknown concentration of given coloured compounds (KMnO₄/ CuSO₄) colorimetrically. Estimation of (i) Mg²⁺ or (ii) Zn²⁺ by complexometric titrations using EDTA.
-	16	16		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none"> Organic Spotting: Carboxylic acids, phenolic, Estimate the amount of metal present in a given solution gravimetrically- Fe as Fe(OH)₃ To determine volumetrically the amounts of sodium carbonate and sodium hydroxide present together in the given solution.
-	24	24		
Month: October			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none"> Organic Spotting: aldehydic, ketonic, amide, nitro, amines Determination of alkali content of antacid tablet using HCl. To estimate H₂O₂ by Iodometric method. Preparations of Ferrous ammonium sulphate (Mohr's salt). Preparation of Potash Alum.
-	32	32		
Month: November			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none"> To determine Cell Constant of the given Conductivity cell and to verify Ostwald dilution law using acetic acid Solution Conductometrically. To determine the normality of given strong acid and weak acid by titrating it against strong base Conductometrically. Semi-micro qualitative analysis using H₂S of mixtures - out of the following: Cations: NH₄⁺, Cu²⁺, Cd²⁺, Fe³⁺, Al³⁺, Co²⁺, Cr³⁺, Ni²⁺, Mn²⁺, Zn²⁺, Ba²⁺, Sr²⁺, Ca²⁺, K⁺, Mg²⁺. Anions: CO₃²⁻, S²⁻, SO₃²⁻, S₂O₃²⁻, NO₃⁻, CH₃COO⁻, Cl⁻, Br⁻, I⁻, SO₄²⁻, C₂O₄²⁻, F⁻
-	32	32		
Month : December			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none"> Preparation of Hexamine Nickel Chloride. Estimation of total hardness of a given sample of water by complexometric titration. Theory Examination
-	16	16		

Shinde

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				solution gravimetrically-Ni as Ni-DMG, Ba as BaSO ₄ <ul style="list-style-type: none"> • Determination of the surface tension of a liquid or a dilute solution using a Stalagmometer. • Study of the variation of surface tension of a detergent solution with concentration
Month: June			Module/Unit:	Sub-units planned
4	-	4	Coordination Chemistry: Theories of Metal Complexes A] Valence Bond Theory	<ul style="list-style-type: none"> • Postulates of VBT, Inner and outer orbital complexes w. r. t. coordination numbers 4 and 6; Drawbacks of VBT. • Practical and Theory Examination

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. III, Sem-V

Department: Chemistry

Subject: Chemistry

Course Title: 1002E1: Physical and Inorganic Chemistry

Name of the Teacher: Dr. Mrs. Sarita Dattajirao Shinde

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Metals, Semiconductors and Superconductors	<ul style="list-style-type: none"> • Introduction, Properties of metallic solids. • Theories of bonding in metal. i) Free electron theory. ii) Molecular orbital theory (Band theory). • Classification of solids as conductor, insulators and semiconductors on the basis of band theory. • Semiconductors. Types of semiconductors - intrinsic and extrinsic semiconductors. • Applications of semiconductors. •
04	-	04		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Metals, Semiconductors and Superconductors	<ul style="list-style-type: none"> • Superconductors: Ceramic superconductors - Preparation and structures of mixed oxide $YBa_2Cu_3O_{7-x}$ • Applications of superconductors. • Introduction • Preparation of tetra amine copper (II) sulphate. • Preparation of ammonium diamminetetraamminechromate (III) • Preparation of tris(thiourea) cuprous sulphate. • Preparation of sodium cuprous thiosulphate
6	21	27		
Month: October			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Organometallic Compounds	<ul style="list-style-type: none"> • Introduction • Definition nomenclature and Classification of organometallic compounds, • EAN rule as applied to carbonyls, • Determination of percentage purity of tetrammine copper (II) sulphate. • Determination of percentage purity of ferrous ammonium sulphate. • Determination of percentage purity of potassium trioxalato aluminate. • Preparation of Urea formaldehyde resin.
8	28	36		
Month: November			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Organometallic Compounds	<ul style="list-style-type: none"> • Structures of methyl lithium, Zeiss salt and ferrocene, • Preparation, structure, bonding and properties of mononuclear carbonyls of 3d metals. • Gravimetric estimation of aluminium as aluminium oxide from the given solution containing potash alum, copper sulphate and free sulphuric acid. • Gravimetric estimation of barium as barium sulphate from the given solution containing
8	28	36		

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B .Sc. III, Sem-VI

Department: Chemistry

Subject: Chemistry

Course Title: 1002F1: Physical and Inorganic Chemistry

Name of the Teacher: Dr. Mrs. Sarita Dattajirao Shinde

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Inorganic Reaction mechanism	<ul style="list-style-type: none"> • Introduction • Classification of Mechanism • Study of Mechanism Association, dissociation, interchange and the rate determining steps • SN^1 and SN^2 reaction for inert and labile complexes
06	-	06		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Inorganic Reaction mechanism	<ul style="list-style-type: none"> • Mechanism of substitution in cobalt (III) octahedral complexes • Trans effect and its theories • Applications of trans effect in synthesis of Pt (II) complexes • Determination of percentage of magnesium in the given sample of talcum powder. • Determination of amount of aluminum in the given solution of potash alum. • Determination of titrable acidity in the given sample of milk or lassi. • Determination of Fe in cement.
8	28	36		
Month: April			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chelation	<ul style="list-style-type: none"> • A brief introduction with respect to ligands, chelating agent, chelation and metal chelates, • Structural requirements of chelate formation, • Determination of chlorine in bleaching powder. • Determination of Free acidity in ammonium sulphate fertilizer. • Determination of percentage of $CaCO_3$ in chalk. • Determination of COD.
8	28	36		
Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chelation	<ul style="list-style-type: none"> • Difference between metal chelate and metal complex, Classification of chelating agents (with specific illustration of bidentate chelating agents), • Application of chelation with respect to chelating agents - EDTA and DMG
6	-	06		
Month : June				<ul style="list-style-type: none"> • Practical and theory Examination

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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. I, Sem-II

Department: Chemistry

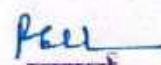
Subject: Chemistry


Course Title: CP 1131 B: Inorganic Chemistry - II

Name of the Teacher: Dr. Mrs. Sarita Dattajirao Shinde

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Nuclear Quadrapole Resonance (NQR) and X-Ray Fluorescence (XRF) Spectroscopy	A] Nuclear Quadra pole Resonance Spectroscopy [NQR]: <ul style="list-style-type: none"> • Basic concepts of NQR; • Nuclear electric quadruple moment, • Electric field gradient,
2	-	2		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Nuclear Quadrapole Resonance (NQR) and X-Ray Fluorescence (XRF) Spectroscopy	<ul style="list-style-type: none"> • Energy levels and NQR frequencies, Effect of magnetic field on spectra, • Factors affecting the resonance signal; line shape and position of resonance signal,
4	-	4		
Month: April			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Nuclear Quadrapole Resonance (NQR) and X-Ray Fluorescence (XRF) Spectroscopy	<ul style="list-style-type: none"> • Relationship between electric field gradient and molecular structure, Interpretation of NQR data. • B] X-ray Fluorescence Spectrometry (XRF): Introduction and basic theory, Instrumentation;
4	-	4		
Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Nuclear Quadrapole Resonance (NQR) and X-Ray Fluorescence (XRF) Spectroscopy	<ul style="list-style-type: none"> • dispersive systems and detectors, • Matrix effects, • XRF with synchrotron radiation, Spectral analysis, Analytical information,
4	-	4		
Month : June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Nuclear Quadrapole Resonance (NQR) and X-Ray Fluorescence (XRF) Spectroscopy	<ul style="list-style-type: none"> • Elementary theory of recoil free emission and resonant absorption of gamma rays, • Applications. • Practical and theory Examination
2	-	2		


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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. I (A+B+C), Sem-II

Department: Chemistry

Subject: Chemistry

Course Title: DSC-1002B: Physical Chemistry

Name of the Teacher: Dr. Asmita Shashikant Tapase

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	Distribution Law	Introduction, solute, solvent and solution, miscible and immiscible liquids, Nernst distribution law and its limitations,
06	-	06		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Distribution Law	Modification of distribution law with respect to change in molecular state of solute (association and dissociation of solute in one of the solvents), Numerical problems. Applications of the distribution law
12	-	12		
Month: April			Module/Unit:	Sub-units planned
12	-	12	Nuclear Chemistry	Introduction, Terminology of nuclear chemistry- Average life, half-life
Month: May			Module/Unit:	Sub-units planned
09	-	09	Nuclear Chemistry	Reaction quotient, decay constant. Types of Nuclear radiation, properties of α , β and γ radiations,
Month: June			Module/Unit:	Sub-units planned
06	-	06	Nuclear Chemistry	Determination of radioactive disintegration constant (decay constant) by half-life method and graphical method. Numerical problems.

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Academic Year: 2022-23

Semesters: B.Sc. II (A+B), Sem-III

Department: Chemistry

Subject: Chemistry

Course Title: DSC-1002C-Part-I: Physical Chemistry and

DSC-1002C-Part-II: Analytical & Industrial Chemistry

Name of the Teacher: Dr. Asmita Shashikant Tapase

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	Chemical Kinetics	<ul style="list-style-type: none"> Introduction, The concept of reaction rates, order and molecularity of a reaction, zero, first order reaction (Derivation not expected).
06	-	06		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemical Kinetics	<ul style="list-style-type: none"> Second order reactions (both for equal and unequal concentrations of reactants) of general equations for rate constants, Characteristic properties of second order reaction, examples. General methods for determination of order of a reaction,
12	32	48		
Month: October			Module/Unit:	Sub-units planned
12	32	44	Chemical Kinetics	<ul style="list-style-type: none"> Concept of activation energy: Activated complex theory and Collision Theory and calculation of activation energy by Arrhenius equation, Numerical Problems. Introduction, Conductometric Titrations: Basic principles, experimental set up titration curves in the titration of (i) strong acid vs, strong base, (ii) weak acid vs, strong base,
			Conductometric Titration	
Month: November			Module/Unit:	Sub-units planned
12	32	48	Conductometric Titration	<ul style="list-style-type: none"> (iii) weak acid vs weak base, (iv) Mixture of strong and weak acid/strong weak base vs, strong base/weak base or strong acid/weak acid
Month: December			Module/Unit:	Sub-units planned
06	16	22	Conductometric Titration	<ul style="list-style-type: none"> (v) sodium chloride vs silver nitrate (vi) barium hydroxide vs magnesium sulphate advantages and limitations

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. III, Sem-V

Department: Chemistry

Subject: Chemistry

Course Title: DSE-1002E1: Physical & Inorganic Chemistry
DSE-1002E2: Organic & Analytical Chemistry

Name of the Teacher: Dr. Asmita Shashikant Tapase

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Quantum Theory	<ul style="list-style-type: none"> Introduction, Dual nature of matter and energy: De Broglie hypothesis, The Heisenberg's uncertainty principle, Concept of energy operators (Hamiltonian), Derivation of Schrodinger wave equation, Physical interpretation of ψ and ψ^2, Particle in a one dimensional box, Schrodinger wave equation for hydrogen atom, Concept of quantum numbers.
04	-	04		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Quantum Theory	<ul style="list-style-type: none"> The Heisenberg's uncertainty principle, Concept of energy operators (Hamiltonian), Derivation of Schrodinger wave equation, Physical interpretation of ψ and ψ^2, Particle in a one dimensional box, Schrodinger wave equation for hydrogen atom, Concept of quantum numbers.
08	28	36		
Month: October			Module/Unit:	Sub-units planned
08	28	36	Quantum Theory Photochemistry	Particle in a one dimensional box, Schrodinger wave equation for hydrogen atom, Concept of quantum numbers. Introduction - Difference between thermal and photochemical processes. Laws of photochemistry: i) Grothus-Draper law, ii) Lambert law, iii) Lambert-Beer's law (with derivations), iv) Stark-Einstein law
Month: November			Module/Unit:	Sub-units planned
08	28	36	Photochemistry	Quantum yield, reasons for high and low quantum yield, Factors affecting Quantum yield, Photosensitized reactions-dissociation of H ₂ , photosynthesis, Photo-dimerization of anthracene, decomposition of HI and HBr, Photophysical and photochemical processes,
Month: December			Module/Unit:	Sub-units planned
03	28	31	Photochemistry	Jablonski diagram depicting various processes occurring in the excited state: Qualitative description of fluorescence and phosphorescence, Chemiluminescence, Electroluminescence, Numerical problems

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Semesters: B.Sc. III, Sem-VI

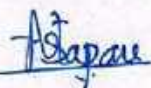
Department: Chemistry

Subject: Chemistry

Course Title: DSE-1002F1: Physical & Inorganic Chemistry
DSE-1002F2: Organic & Industrial Chemistry

Name of the Teacher: Dr. Asmita Shashikant Tapase

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Thermodynamic s	<ul style="list-style-type: none"> Introduction, Recapitulation of all four laws of thermodynamics, Free energy: Gibbs function (G) and Helmholtz function (A),
06	28	06		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Thermodynamic s	<ul style="list-style-type: none"> Criteria for thermodynamic equilibrium and spontaneity, Relation between G and H: Gibbs Helmholtz equation, Phase equilibria: Clapeyron-Clausius equation and its applications, Thermodynamic derivation of law of mass action, van't-Hoff isotherm and isochore
8	28	60		
Month: April			Module/Unit:	Sub-units planned
8	28	60	Thermodynamic s Adsorption	<ul style="list-style-type: none"> Fugacity and activity concept, Partial molar quantities, partial molar volume, Concept of chemical potential, Numerical problems Introduction, Adsorption as a surface phenomenon (mechanism), Definition of important basic terms: absorption, adsorption, adsorbant, adsorbate, interface etc., Distinction between adsorption and absorption,
Month: May			Module/Unit:	Sub-units planned
6	-	06	Adsorption	<ul style="list-style-type: none"> Characteristics of adsorption, Factors affecting adsorption, Types of adsorption, Distinction between physical adsorption and chemical adsorption, Adsorption isotherms: Freundlich, Langmuir adsorption isotherm, BET equation (derivation not expected), determination of surface area using Langmuir method and BET equations..



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Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. II, Sem-I

Department: Chemistry

Subject: Chemistry

Course Title: Material Science

Name of the Teacher: Dr. Asmita Shashikant Tapase

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Magnetic Materials	Introduction, Atomic magnetism and solids,
02	-	02		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Magnetic Materials	type of magnetic materials, exchange interactions, hysteresis loop and their classification,
04	-	04		
Month: October			Module/Unit:	Sub-units planned
04	-	04	Magnetic Materials	calculation of magnetic moment from saturation magnetization magnetic domains, examples of magnetic materials,
Month: November			Module/Unit:	Sub-units planned
04	-	04	Magnetic Materials	soft & hard ferrites, structure & magnetic interactions in spinel, garnet hexagonal ferrites,
Month: December			Module/Unit:	Sub-units planned
02	-	02	Magnetic Materials	application of magnetic materials

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Academic Year: 2022-23

Semesters: M.Sc. II, Sem-II

Department: Chemistry

Subject: Chemistry

Course Title: Paper IV: Inorganic Nanomaterials

Name of the Teacher: Dr. Asmita Shashikant Tapase

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Applications of Nanomaterials	a) Carbon nanomaterials
02	-	02		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Applications of Nanomaterials	b) Nanocomposites include metal nanomaterials such as single particle as well as core-shell nanomaterials. Fuel cell
04	-	04		
Month: April			Module/Unit:	Sub-units planned
04	-	04	Applications of Nanomaterials	Solar cell, medicinal applications, agro-food applications c) Polymer Nanotechnology
Month: May			Module/Unit:	Sub-units planned
04	-	04	Applications of Nanomaterials	d) Organic Electronics e) Nanotribology
Month: June			Module/Unit:	Sub-units planned
02	-	02	Applications of Nanomaterials	f) Nanobiotechnology

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. I (A+B+C), Sem-I

Department: Chemistry

Subject: Chemistry

Course Title: DSC-1002A : Part II-Organic Chemistry

Name of the Teacher: Dr. Mrs. S. D. Shirke

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	Induction	<ul style="list-style-type: none"> • General Introduction • Discussion on Course Structure • Discussion on Examination pattern • Discussion on Syllabus
06	-	06		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Stereochemistry of Organic Chemistry	<ul style="list-style-type: none"> • General introduction –Meaning, Definition, Types of stereoisomerism • 1.Optical Isomerism 2. Geometrical Isomerism 3. Conformational Isomerism
12	16	28		
Month: October			Module/Unit:	Sub-units planned
12	16	28	Stereochemistry of Organic Chemistry	<ul style="list-style-type: none"> • Elements of Symmetry-Ex. of optical isomerism- Lactic acid, Tartaric acid, 2,3-butanoic acid. Geometrical isomerism- Dicarboxylic acids- Maleic and Fumaric acid 3.Conformational Isomerism- Introduction
Month: November			Module/Unit:	Sub-units planned
12	16	28	Continued... 2. Aromatic Hydrocarbons	<ul style="list-style-type: none"> • Ethane – Staggered and eclipsed • n-Butane –Fully, partially eclipsed and staggered • Cyclohexane – Chair, Boat, Twist boat and Half chair 2. Aromaticity - Definition ,Classification, Structure of Benzene- MOT and VBT, Electrophilic Substitution Reactions- Nitration, Sulphonation , Halogenation and Friedal Craft's Alkylation and Acylation with mechanism.
Month: December			Module/Unit:	Sub-units planned
06	08	14	Aromaticity continued....	

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. II, Sem-V

Department: Chemistry

Subject: Chemistry

Course Title : DSE-1002E2: Organic & Analytical Chemistry

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Amino acids, Peptides and Proteins	<ul style="list-style-type: none"> • Introduction • Definition, Classification and Examples • Electrophoresis, Isoelectric point • Zwitterions-Examples • Peptides- Structure
4	-	4		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Proteins.....	<ul style="list-style-type: none"> • Strecker's synthesis of amino acids • Gabriel phthalimide synthesis • Reactions of Amino acids w.r.t. -COOH and -NH₂ group.
4	32	20		
Month: April			Module/Unit:	Sub-units planned
4	32	04	Continued...	<input type="checkbox"/> Primary, secondary structures of protein <input type="checkbox"/> Tertiary and Quaternary structures of Proteins. Denaturation of proteins
Month: May			Module/Unit:	Sub-units planned
-	-	-	-	-

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Academic Year: 2022-23

Semesters: B.Sc. III, Sem-V

Department: Chemistry

Subject: Chemistry

Course Title : DSE-1002E2: Organic & Analytical Chemistry

Name of the Teacher: Dr. Mrs. Shirke S.D.

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1. Natural Products- 1. Terpenoids	<ul style="list-style-type: none"> • Introduction. • Definition, Classification
04	-	04		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Terpenoids continued... 2. Alkaloids	<ul style="list-style-type: none"> • Properties,- Identification of structure. • e.g. Citral - Analytical evidence • Synthetic evidence • Alkaloid – Introduction • Classification.
08	28	36		
Month: October			Module/Unit:	Sub-units planned
08	28	36	Alkaloids continued... 2.A.Green Chemistry	<ul style="list-style-type: none"> • Ex. Nicotine : Analytical evidence • Synthetic evidence for structure of Nicotine • 2I.Introduction of Green Chemistry • Twelve Principles of Green Chemistry
Month: November			Module/Unit:	Sub-units planned
08	28	36	Continued... B. Pharmaceuticals	<ul style="list-style-type: none"> • Advanced green methods like microwave oven and Ultrasound waves.. • B. Introduction, Characteristics of Ideal Drug. Classification of Drugs.
Month: December			Module/Unit:	Sub-Units planned
03	14	17		<ul style="list-style-type: none"> • B. Synthesis of some selected drugs

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. III, Sem-VI

Department: Chemistry

Subject: Chemistry

Course Title: DSE-1002F1: DSE-1002F2: Organic and

Industrial Chemistry

Name of the Teacher: Dr. Mrs S.D. Shirke

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1.Spectroscopic Methods- -Nuclear Magnetic Resonance Spectroscopy	<ul style="list-style-type: none"> • Introduction • Principles of NMR • NMR Instrumentation – Schematic diagram Magnetic and nonmagnetic nuclei. Chemical shift.
06	-	06		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Continued...	<ul style="list-style-type: none"> • Chemical Shift - Definition, Factors affecting Chemical shift, Shielding and deshielding , • Merits of TMS, Peak integration. • Coupling Constant • Types of coupling constant. • Spin- spin coupling
08	28	36		
Month: April			Module/Unit:	Sub-units planned
08	28	36	Manufacturing of Sugar and Jaggary	Manufacture of Raw Sugar – steps involved...Extraction of juice, Clarification, Multiple effect evaporator- Concentration, Centrifugation Drying. Manufacture of White sugar- All steps repeated Refining of sugar. Byproducts of sugar industry.
Month: May			Module/Unit:	Sub-units planned
06	-	06	Continued...	<ul style="list-style-type: none"> • Manufacture of White sugar- Extraction , Clarification, Concentration, Centrifugation and Refining. • Manufacture of Jaggery, • Antimicrobial testing of Jaggary.

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. II, Sem-III

Department: Chemistry

Subject: Chemistry

Course Title: CC-1144 C: Advanced Synthetic methods

Name of the Teacher: Dr. Mrs. S.D. Shirke

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Use of Following in Synthesis	Advanced Synthetic chemistry – Use of Merrifield Resin, Supramolecular Chemistry,
01	-	04		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Continued...	Multicomponent Reactions, Use of Microwaves, Reactions in Aqueous medium, Organic medium and in presence of solid support.
04	-	04		
Month: October			Module/Unit:	Sub-units planned
04	-	04	Continued...	Use of Ultrasound Waves- mechanism, Reactions. Electro-organic Reactions. Examples, Mechanism
Month: November			Module/Unit:	Sub-units planned
04	-	04	Continued...	Enzymatic reactions Mechanism – Key – Lock Theory Examples
Month: December			Module/Unit:	Sub-units planned
02	-	02	Continued...	Examples of Multicomponent Reactions.

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. II, Sem-IV

Department: Chemistry

Subject: Chemistry

Course Title: 1152B-Applied Organic Chemistry

Agrochemicals

Name of the Teacher: Dr. Mrs. S. D. Shirke

Month: January			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	1. Agrochemicals	Introduction- Definition, Classification
01	-	01		
Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Continued...	Carbamate Insecticides - Carbaryl, Baygon, Ziram, Zineb Natural and synthetic pyrethroids: Isolation and structures of natural allethrin, fenvalerate, cypermethrin
01	-	04		
Month-March			Module/Unit:	Sub-units planned
01	-	04	Continued...	Organophosphorous insecticides- Introduction, Synthesis and applications of Malathion, Phorate. Plant growth regulators: General survey and synthesis of simple compounds and applications.
Month: April			Module/Unit:	Sub-units planned
01	-	04	Continued...	Insect repellents: General survey, synthesis and applications. Juvenile hormone: introduction & structures JHA: importance synthesis Pheromones: introduction, examples, Importance in IPM.
Month: May			Module/Unit:	Sub-units planned
02	-	02	Continued...	Structures Synthesis of juvabione bombykol, grandisol and disparlure

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Annual Teaching Plan

Academic Year - 2022-23. M.Sc, Sem. I, III

Department- Chemistry

Name of the Teacher – Dr. A. A. Patravale

Month – September

M.Sc.I Sem I:- Course Title:- Chemistry				
: Lectures	Practical's	Total	Module Unit	Sub-Units Planned
04	--	04	Reaction mechanism	Introduction of of reaction mechanism and reactivity of carbocations and carbanions, free radicals, arynes, carbenes, N-heterocyclic carbene, nitrenes
M.Sc.II Sem I :- Course Title:- Analytical Chemistry				
Lectures	Practical's	Total		
16	32	48	a) Reaction mechanism b) Aliphatic Nucleophilic substitutions	a) reactivity of nitrenes and Nitrogen, sulphur and phosphorus ylides. b) SN2 and SN1, S _N i reactions with respects to mechanism and stereochemistry. Nucleophilic substitutions at an allylic, aliphatic trigonal, benzylic, aryl and vinylic carbons.

Month – October

M.Sc.I Sem I:- Course Title:- Chemistry				
: Lectures	Practical's	Total	Module Unit	Sub-Units Planned
03	--	03	b) Aliphatic Nucleophilic substitutions	Reactivity effect of substrate structure, effect of attacking nucleophiles, leaving groups and reaction medium.
M.Sc.II Sem III :- Course Title:- Analytical Chemistry				
Lectures	Practical's	Total		
12	24	36	Drugs	Development of new drugs, procedures followed in drug design. History and development of Quantitative structure activity relationship (QSAR). Concepts of drug receptors, Relation of chemical structure and chemical activity. Antibiotics Introduction, β -lactum Antibiotics, cephalosporin Antibiotics, SAR of β -lactum and

Month – January

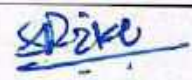
M.Sc.I Sem I:- Course Title:- Chemistry

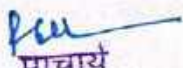
: Lectures	Practical's	Total	Module Unit	Sub-Units Planned
03	--	03	b) Six membered Heterocycles with one heteroatom	Synthesis and reactions of Coumarine,

M.Sc.II Sem III :- Course Title:- Analytical Chemistry

Lectures	Practical's	Total	Module Unit	Sub-Units Planned
12	24	36	Practical	Estimation of various drug and chemicals Repeat experiment preparation and estimation


Dr. A. A. Patravale


Dr. Mrs. S. D. Shirke


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Month – April				
M.Sc.I Sem. II:- Course Title:- Organic Chemistry-II				
Lectures	Practical's	Total	Module Unit	Sub-Units Planned
08	--	08	b) Hydroboration c) Enamines	Mechanism and Synthetic Applications Formation and reactivity of enamines
M.Sc.II Sem IV :- Course Title:- Analytical Chemistry				
Lectures	Practical's	Total	Module Unit	Sub-Units Planned
16	32	48	Synthesis and applications of perfumery	Introduction to perfumery compounds and its commercial process, essential oil, method of preparation and important, synthesis of 2-Phenylethanol, Yara-yara, vanillin
				preparation and important, synthesis of other food flavours, synthetic musk, Jasmone, ionones, beta-ionones from citral, phenyl acetic acid and its ester, benzyl acetate.

Month – May				
M.Sc.I Sem. II:- Course Title:- Organic Chemistry-II				
Lectures	Practical's	Total	Module Unit	Sub-Units Planned
08	--	08	Atomic Absorption Spectroscopy (AAS) Inductively Coupled Plasma Spectroscopy	Introduction, Principal, difference between AAS and FES, Advantages of AAS over FES, advantages and disadvantages of AAS, Instrumentation, Single and double beam AAS, detection limit and sensitivity, Interferences, applications. Graphite furnace atomic absorption spectroscopy, general description, advantages and disadvantages. Flame photometry, Cold Vapor Mercury, Hydride Generation, Spark emission, challenges and limitations. Introduction, Nebulisation Torch, Plasma, Instrumentation, Interferences, and Applications. Problems: Simple problems based on AAS and ICP
M.Sc.II Sem IV :- Course Title:- Analytical Chemistry				
Lectures	Practical's	Total	Module Unit	Sub-Units Planned

Vivekanand College, Kolhapur (Autonomous)

Syllabus Completion Report

Academic Year - 2022-23. M.Sc, Sem. I, III

Department- Chemistry


Name of the Teacher – Dr. A. A. Patravale

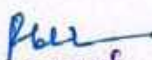
Month – September				
Class	Lectures / Practical's	Module Unit	Sub-Units Planned	Remark
M.Sc.I Sem I:-	Lectures	Reaction mechanism	Introduction of of reaction mechanism and reactivity of carbocations and carbanions, free radicals, arynes, carbenes, N-heterocyclic carbene, nitrenes	Completed
		Module Unit	Sub-Units Planned	
		a) Reaction mechanism b) Aliphatic Nucleophilic substitutions	a) reactivity of nitrenes and Nitrogen, sulphur and phosphorus ylides. b) SN2 and SN1, SNi reactions with respects to mechanism and stereochemistry. Nucleophilic substitutions at an allylic, aliphatic trigonal, benzylic, aryl and vinylic carbons.	Completed

Month – October				
Class	Lectures / Practical's	Module Unit	Sub-Units Planned	Remark
M.Sc.I Sem I	Lectures	b) Aliphatic Nucleophilic substitutions	Reactivity effect of substrate structure, effect of attacking nucleophiles, leaving groups and reaction medium.	Completed
M.Sc.I Sem I	Practical's	Preparation	Synthesis of various organic compounds	Completed
Class	Lectures / Practical's	Module Unit	Sub-Units Planned	Remark
M.Sc.II Sem III	Lectures	Drugs	Development of new drugs, procedures followed in drug design. History and development of Quantitative structure activity relationship (QSAR). Concepts of drug receptors, Relation of chemical structure and chemical activity. Antibiotics Introduction, β -lactum Antibiotics, cephalosporin Antibiotics, SAR of β -lactum and cephalosporin, Structural features of tetracycline & macrocyclic antibiotics (no synthesis).	Completed

Month – January				
Class	Lectures / Practical's	Module Unit	Sub-Units Planned	Remark
M.Sc.I Sem I	Lectures	b) Six membered Heterocycles with one heteroatom	Synthesis and reactions of Coumarine,	Completed
M.Sc.I Sem I	Practical's	Estimation	Estimation of various drug and chemicals Repeat experiment preparation and estimation	Completed


Dr. A. A. Patravale


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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year - 2022-23

Sem. I, III

Department- Chemistry

Name of the Teacher – Dr. D. S. Gaikwad

Month – September

M.Sc.I Sem I:- Course Title:- Chemistry

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	--	04	Stereochemistry	Introduction of stereochemistry, Symmetry, Chirality, Prochiral relationship, homotopic, enantiotopic and distereiotopic groups and faces.

M.Sc.II Sem III :- Course Title:- Organic Chemistry

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
16	32	48	Applications of following metal in organic synthesis	Introduction to organometallic chemistry, applications of metals in organic synthesis such as Pd, Mg Rh, Tl, Si, use of Cu in Clie chemistry

Month – October

M.Sc.I Sem I:- Course Title:- Chemistry

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
03	--	03	Stereochemistry	Recemic modifications and their resolution, Geometrical isomerism R, S and E, Z nomenclature, Thre and Erythro isomers. Allenes and spiranes,

M.Sc.II Sem III :- Course Title:- Organic Chemistry

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
12	24	36	Drugs and Heterocycles	a) Six membered Heterocycles with two and more Heteroatoms (8) Synthesis and reactions of diazines & triazines. b) Seven membered Heterocycles (7) Synthesis and reactions of azepines, oxepines, thiepinines.
			Mass Spectrometry	Mass Spectrometry Introduction, its production- EI, CI, FD and FAI factors affecting fragmentation, its analysis, ion abundance;

Month – November

M.Sc.I Sem I:- Course Title:- Chemistry

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	--	04	Stereochemistry	Stereochemistry of the compound containing Nitrogen, Sulphur and

phosphorous. Conformational analysis: Cyclohexane derivatives, stability and reactivity; Conformational analysis of Mono and disubstituted cyclohexanes.

M.Sc.II Sem III :- Course Title:- Organic Chemistry

Lectures	Practicals	Total		
16	32	48	Mass Spectrometry	Mass spectral fragmentation of aldehydes, ketones, aromatic hydrocarbons, carboxylic acids, ethers, alcohols, amines, nitro, cyano compounds; molecular ion peak, metastable ion peak; High resolution mass spectrometry (HRMS), MALDI, TOF; Problems associated with Mass Spectroscopy.
			Combined spectral problems	Structural problems based on combined spectroscopic techniques (including reaction sequences)

Month - December

M.Sc.I Sem I:- Course Title:- Chemistry

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
03	--	03	Stereochemistry	Conformational analysis of Mono and disubstituted cyclohexanes. Previous year Question paper discussion.

M.Sc.II Sem III :- Course Title:- Organic Chemistry

Lectures	Practicals	Total		
12	24	36	Carbon-13 NMR Spectroscopy	General introduction to 13C NMR spectroscopy; chemical shift values [aliphatic, olefinic, alkyne, aromatic, heteroaromatic and carbonyl compounds]; proton coupled, proton decoupled 13C NMR spectra, advanced 13C NMR techniques (NOE, DEPT, Off resonance, HETCOR), Heteronuclear coupling, problems associated with 13C NMR.
			Combined spectral problems	Structural problems based on combined spectroscopic techniques (including reaction sequences)

D. S. Gaikwad

Dr. D. S. Gaikwad

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					Ti, Use of lithium dialkyl cuprate, their addition to carbonyl and unsaturated carbonyl compounds.
M.Sc.II Sem IV :- Course Title:- Organic Chemistry					
Lectures	Practicals	Total		Module Unit	Sub-Units Planned
16	32	48		Stereochemistry	Stereochemistry of compounds containing no chiral carbon atoms and diastereoisomerism (Geometrical isomerism). a) Stereochemistry of Allenes, Spiranes and Biphenyls
				Alkaloids	Introduction, occurrence, isolation and functions of alkaloids, Structure, stereochemistry and synthesis of the following: Atropine and Conin.

Month – May					
M.Sc.I Sem. II:- Course Title:- Organic Chemistry-II					
Lectures	Practicals	Total		Module Unit	Sub-Units Planned
08	--	08		Methodologies in organic synthesis	Ideas of synthones and retrones, Functional group transformations and inter conversions of simple functionalities.
M.Sc.II Sem IV :- Course Title:- Organic Chemistry					
Lectures	Practicals	Total		Module Unit	Sub-Units Planned
12	24	36		Stereochemistry	Assignment of configuration b) Configuration of diastereomers (Geometrical isomerism) based on physical and chemical methods.

D. S. Gaikwad
Dr. D. S. Gaikwad

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Vivekanand College, Kolhapur (Autonomous)

Department of Chemistry
Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: Mr. A. T. Mane

Programme : M.Sc. I Semester I

Subject: Chemistry Course Title: Inorganic Chemistry

Month August/ September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	a) Stereochemistry and Bonding in main group compounds	VSEPR theory and drawbacks, bond length, bond angles, bond energies and resonance, $P\pi-P\pi$ and $P\pi-d\pi$ bonds, Bent rule, Walsh diagram, Back bonding, some simple reactions of covalently bonded molecules
5	--	05		
Month october			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	b) Metal ligand equilibria in solution	Definition of stability constant, step wise and overall formation constant and their interaction, trends in stepwise constants, factors affecting the stability of metal complexes with reference to the nature of metal ion and ligand, chelate effect
5	--	05		
Month Nov./Dec.			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	b) Metal ligand equilibria in solution	ternary complexes and factors affecting their stabilities, stability of metal complexes of crown ether, Determination of stability constant for binary complexes using pH-metric (Bjerrums method) and spectrophotometric (Job's and mole ratio) techniques.
5	--	05		

Programme : M.Sc. I Semester II

Subject: Chemistry Course Title: Inorganic Chemistry

Month February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemistry of non – Transition elements	General discussion on the properties of the non – transition elements, special features of individual elements, synthesis, properties and structure of halides and oxides of the non – transition elements,
4	16	20		
Month March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemistry of non – Transition elements	Polymorphism in carbon, phosphorous and sulphur
4	16	20		
Month April			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemistry of non – Transition elements	Synthesis, properties and structure of boranes, carboranes, silicates, carbides, phosphazenes, sulphur – nitrogen compounds,
4	16	20		
Month May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemistry of non – Transition elements	peroxo compounds of boron, carbon, sulphur, structure and bonding in oxyacids of nitrogen, phosphorous, sulphur and halogens, interhalogens, pseudohalides
4	16	20		



Mr. A. T. Mane



Dr. Mrs. S. D. Shirke


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Vivekanand College, Kolhapur (Autonomous)

Department of Chemistry
Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: Mr. A. T. Mane

Programme : M.Sc. II Semester III

Subject: Chemistry Course Title: Inorganic Chemistry

Month : August			Module/Unit:	Sub-units planned
Lectures 15	Practicals 12	Total 15	Photochemistry of Metal Complexes	Absorption, Excitation, Photochemical laws, Quantum yield, Electronically excited states of Metal complexes, Types of photochemical reactions; substitution reactions, rearrangement reactions and redox reactions, Photochemistry of coordination compounds,
Month : September			Module/Unit:	Sub-units planned
Lectures 15	Practicals 12	Total 27	Reactions of Coordinated Ligands	Reaction of donor atoms (Halogenation of coordinated N, Alkylation of coordinated S and N, Solvolysis of coordinated P atoms), Reactions of nondonor atoms (nucleophilic and electrophilic behaviour of ligands).
Month : October			Module/Unit:	Sub-units planned
Lectures 15	Practicals 12	Total 27	Magnetic Properties of Transition Metal Complexes	van't-Hoff isotherm and isochore, Fugacity and activity concept, Partial molar quantities, partial molar volume, Concept of chemical potential, Numerical problems
Month : November/ Dec.			Module/Unit:	Sub-units planned
Lectures 15	Practicals 12	Total 27	Mixed Ligand Complexes and Catalysis of Transition Metal Complexes	Types of magnetic behaviour, Diamagnetism, Origin of paramagnetism, Temperature dependent paramagnetism, Spin-orbit interaction, Pascal constants, Ferromagnetism and antiferromagnetism of metal complexes, Van Vleck's equation: derivation and applications, Spin orbit coupling and magnetic moment, Spins crossover

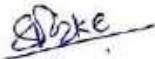
Programme : M.Sc. II Semester IV

Subject: Chemistry Course Title: Inorganic Chemistry

Month : February			Module/Unit:	Sub-units planned
Lectures 15	Practicals -	Total 15	Mossbauer Spectroscopy	Basic principles of ^{57}Fe Mössbauer spectroscopy, Instrumentation, Mössbauer parameters; recoilless emission and absorption of x-rays, isomer shifts, magnetic dipole hf splitting and electric quadrupole hf splitting, Magnetic hyperfine interaction, Line broadening, Application of Mössbauer spectroscopy
Month : March			Module/Unit:	Sub-units planned
Lectures 15	Practicals -	Total 15	Electron Spin Resonance Spectroscopy	Presentation of spectrum, Hyperfine splitting in proton systems, Rules for evaluating ESR lines of Naphthalene anion radical, Pyrazine anion radical, Isomers of Xylene anion radicals, VO_2 Superhyperfine splitting, Instrumentation, 'g' value and factors affecting on 'g' value, Zero field splitting, Karmers's degeneracy, Applications, Numericals problems.
Month : April			Module/Unit:	Sub-units planned
Lectures 15	Practicals -	Total 15	Coordination Polymers	General introduction, Natural polymers, Synthesis of coordination polymers, Use of polymeric ligands in synthesis of coordination polymers, synthesis and uses of Metal coordination polymers, Silicon polymers and Organosilicon polymers.
Month : May			Module/Unit:	Sub-units planned
Lectures 15	Practicals -	Total 15	Applications of Coordination Compounds	Metal complexes in Inorganic qualitative analysis, The 'brown ring' test, complexometric titrations, Complexes in colourimetry, Coordination compounds in gravimetry, Stabilization of oxidation states, chemistry and therapy: Complexation in food poisoning, Metal Metal complexes in alkene conversions, Complexes in Electroplating, Complexes in Metallurgy,


Mr. A. T. Mane


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Vivekanand College, Kolhapur (Autonomous)

Department of Chemistry

Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: Dr. S. D. Kharade

Programme: M.Sc. I Semester II

Subject: Chemistry

Course Title: Inorganic Chemistry

Month January			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Studies and applications of Lanthanides and Actinides	Occurrence, properties of f-block elements, electronic configuration and oxidation state
4	-	4		
Month February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Studies and applications of Lanthanides and Actinides	Colour, spectral and magnetic properties of lanthanides and actinides Lanthanide contraction
4	-	4		
Month March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Studies and applications of Lanthanides and Actinides	Compounds of lanthanides, Use of Lanthanide compounds as shift reagents, Photoluminescence properties of lanthanide compounds,
4	-	4		
Month April			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Studies and applications of Lanthanides and Actinides	Modern methods of separation of lanthanides and actinides, organometallic chemistry of lanthanides and actinides, applications of lanthanides and actinides, applications of lanthanide and actinide compounds in industries.
4	-	4		

Khazade
Dr. S. D. Khazade

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Vivekanand College, Kolhapur (Autonomous)

Department of Chemistry

Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: Dr. S. D. Kharade

Programme: M.Sc. II Semester IV

Subject: Chemistry Course Title: Inorganic Chemistry

Month January			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	M. Sc. I sem I and M. Sc. II Sem III practical examination will be conducted	
-	-	-		
Month February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Inorganic Reaction Mechanism	<ul style="list-style-type: none"> • Types of mechanisms Intimate and stoichiometric mechanism of ligand substitution. • Substitution in square planar complexes: trans effect, • Electron transfer reactions Marcus equation, • Types and factors affecting electron transfer reactions.
16	4*3 = 12	28		
Month March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Reaction Mechanism of Transition Metal complexes	<ul style="list-style-type: none"> • Substitution reaction, • Reactions of transition metal complexes, • mechanism of substitution reactions of octahedral complexes, • Stereochemical changes in dissociation (SN₂) and displacement (SN₂) mechanism • Isomerization and racemization reactions in octahedral complexes.
16	4*3=12	28		

Vivekanand College, Kolhapur (Autonomous)

Department of Chemistry

Academic Year: 2022-23

Annual Teaching Plan

Name of Teacher: Dr. Mrs. H. V. Sanghani

Programme: M.Sc. II Semester III

Subject: Chemistry Course Title: Organic Chemistry 2022-23

Month: September			Module/Unit:	
Lectures	Practical	Total	Pericyclic Reactions(15)	Molecular Orbital Symmetry, FMO of Ethene, 1,3 Butadiene, 1,3,5 hexatriene and allyl System, Woodward Hoffman Correlation diagram, FMO and PMO, approach, Electrocyclic reaction, conrotatory and disrotatory, 4n, 4n+2 and allyl System, Cycloaddition and Supra and Antarafacial Addition, 4n and 4n+2sys, 2+2 addition of ketenes,
8	3*4=12	20		
Month October			Module/Unit:	
Lectures	Practical	Total	Pericyclic Reactions(15)	1, 3 dipolar, cycloaddition and chelotropic reaction, Sigmatropic rearrangement (3,3) and (5,5), Claisen and Cope Rearr, Aza Cope, Ene reaction.
8	3*4=12	20		
			Photochemistry (15)	Effect of light intensity on rate of photochemical reaction, Types of Photochemical Reaction, Photodissociation gas phase photolysis, photochemistry of alkynes, Cyclisation Reaction, Rearrangement of 1,4 and 1,5 dienes, Photochemistry of carbonyl Compounds, Intramolecular reactions of carbonyl compounds, alpha,beta unsaturated compounds, cyclohexadione, intermolecular cycloaddition Reaction, dimerization and oxetane formation, photo fries reaction of anilides singlet molecular Oxygen reaction, photochemistry of vision

Month November			Module/Unit:	
Lectures	Practical	Total	UV & IR Spectroscopy (15)	Woodward Fisher rules for conjugated diene and carbonyl compounds, Calculation of Lambda max, UV spectra of aromatic and heterocyclic compounds Steric effect in Biphenyl
8+7		15		
Month December			Module/Unit:	
Lectures	Practical	Total	UV & IR Spectroscopy (15)	IR Frequencies of -OH, ether, phenol, and amines, Vibrational frequencies of carbonyl compounds, Effect of H-Bonding and solvent effect, FTIR
8+7		15		

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Vivekanand College, Kolhapur (Autonomous)

Department of Chemistry

Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: Dr. Mrs. H. V. Sanghani

Programme: M.Sc. II Semester IV

Subject: Chemistry Course Title: Organic Chemistry 2022-23

Month January			Module/Unit:	
Lectures	Practical	Total	Mass Spectroscopy: (15)	Basic Principle, Instrumentation, Electron-impact Induced and FAB spectrometry, Qualitative and semiquantitative theory, Metastable ions, Stevensons rule, Application of metal compounds having, Carbonyl, alkyl, cyclopentadienyl
8	3*4=12	20		
Month February			Module/Unit:	
Lectures	Practical	Total	Energy Conversion Devices (15)	Fuel Cell Production of Hydrogen: water gas, Bosch process, Biosynthesis, Coal gasification, steam iron process, partial oxidation process, Storage and transport.
8	3*4=12	20		

Month February			Module/Unit:	
Lectures	Practical	Total	Energy Conversion Devices	Applications of Oxo & Wacker Process: Soaps & Synthetic Detergents (05)
8+7		15	Polymers (10) Applications of Oxo & Wacker Process: Soaps & Synthetic Detergents (05)	
Month March			Module/Unit:	
Lectures	Practical	Total	Nano toxicity and Biosafety (15)	Routes and Exposure Toxicity of Nanomaterials, Effects.
8+7		15		

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Dr. H. V. Sanghani

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Vivekanand College, Kolhapur (Autonomous)

Department of Chemistry

Academic Year: 2022-23

Annual Teaching Plan

Name of the teacher: Dr. Mrs. H. V. Sanghani

Programme: M.Sc. I Semester I

Subject: Chemistry **Course Title:** Analytical Chemistry 2022-23

Month : September & October			Module/Unit:	
Lectures	Practical	Total	Introduction to Quality control and Quality Assurance	Concept, Significance , Q Chart , R Chart, Problems on it, Quality in Analytical Chemistry Quality of Chem Lab, TQM
7+8		15		
Month : December and January			Module/Unit:	
Lectures	Practical	Total	Unit 2-a. Nuclear Magnetic Resonance (NMR) (08) b. Mass Spectroscopy (07)	Basic Principle, Instrumentation, Electron-impact Induced and FAB spectrometry, Qualitative and semiquantitative theory , Metastable ions, Stevensons rule, Application of metal compounds having , Carbonyl, alkyl , cyclopentadienyl compounds Continued
7+8		15		

Dr. H. V. Sanghani

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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23 Semesters: B.Sc. I (B), Sem-II Department: Chemistry

Subject: Chemistry

Course Title: DSC-1002B: Analytical Chemistry

Name of the Teacher: Miss. Siddhika Nisar Inamdar

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	Chromatography	Introduction, Basic principle of chromatography , Basic terms used in chromatography.
04	16	20		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chromatography	Classification of chromatography, Paper chromatography, application, advantages & disadvantages.
04	16	20		
Month: April			Module/Unit:	Sub-units planned
04	16	20	Chromatography	Thin layer Chromatography, applications, advantages & disadvantages, comparison of paper and thin layer chromatography.
Month: May			Module/Unit:	Sub-units planned
04	16	20	Dairy Chemistry	Introduction, constituents of Milk and their physicochemical properties, milk carbohydrate, milk fat, milk protein, vitamins and minerals in milk.
Month: June			Module/Unit:	Sub-units planned
04	-	04	Dairy Chemistry	Enzymes in milk, milk processing, definition and composition of dairy products.


Miss. S. N. Inamdar


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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. II (A+B), Sem-III

Department: Chemistry

Subject: Chemistry

Course Title: D5C-1002C-Part-I: Physical Chemistry

Name of the Teacher: Miss. Siddhika Nisar Inamdar

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	Physical properties of liquid	• Introduction, classification of physical properties, surface tension and chemical constitution.
04	16	20		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Physical properties of liquid	• Viscosity, refractive index, determination of viscosity by Ostwald's viscometer,
04	16	20		
Month: October			Module/Unit:	Sub-units planned
04	16	20	Physical properties of liquid	• Parachor, specific and molecular refractivities, measurement of refractive index by Abbe's refractometer, molecular refractivity and chemical constitution.

Miss. S. N. Inamdar

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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. III, Sem-V

Department: Chemistry

Subject: Chemistry

Course Title: DSE-1002E1: Physical & Inorganic Chemistry

DSE-1002E2: Organic & Analytical Chemistry

Name of the Teacher : Miss. Siddhika Nisar Inamdar

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Qualitative and quantitative analysis	Introduction, importance of analysis (qualitative & quantitative) .
01	-	01		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Qualitative and quantitative analysis	Methods of analysis, sampling of solids ,liquids and gases , classification of analytical methods of analysis.
04	24	28		
Month: October			Module/Unit:	Sub-units planned
04	24	28	Qualitative and quantitative analysis	• Errors, types of errors, methods of expressing accuracy. Absolute method, comparative method, Absolute and relative error.
Month: November			Module/Unit:	Sub-units planned
04	24	28		Significant error, mean, median, standard deviation, relative mean deviation, numerical problems.

Miss. S. N. Inamdar

Dr. S. D. Shirke

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Dept. of Chemistry

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. III, Sem-VI

Department: Chemistry

Subject: Chemistry

Course Title: DSE-1002F1: Physical & Inorganic Chemistry

Name of the Teacher: Miss. Siddhika Nisar Inamdar

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Radioactivity	• Introduction, detection and measurement of nuclear radiation. Scintillation counter method.
04	24	28		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Radioactivity	• Geiger muller counter method, radioactive equilibrium, range of alpha particles, Geiger Nuttle relation.
04	24	28		
Month: April			Module/Unit:	Sub-units planned
04	24	28	Radioactivity & fertilizers	• Determination of radioactive constant or disintegration constant, numerical problems. • Fertilizers: Introduction, macronutrients, micronutrients, classifications of fertilizers.
Month: May			Module/Unit:	Sub-units planned
04	-	04	Fertilizers	• Needs and essential requirements of fertilizer, fertilizer and pH value of soil, mixed fertilizers, complex fertilizers, pollution caused by fertilizers and effect of fertilizers.


Miss. S. N. Inamdar


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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. II, Sem-IV

Department: Chemistry

Subject: Chemistry

Course Title: Paper IV: Inorganic Nanomaterials

Name of the Teacher: Miss. Siddhika Nisar Inamdar

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Advanced synthetic methods of inorganic nanomaterials	Introduction, General introduction to nanomaterials, nanoscience & nanotechnology, general properties of nanomaterials, applications, history.
02	-	02		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Advanced synthetic methods of inorganic nanomaterials	Chemical bath deposition technique, factors, advantages and disadvantages, ionic and solubility products, preparation of binary semiconductors.
04	-	04		
Month: April			Module/Unit:	Sub-units planned
04	-	04	Advanced synthetic methods of inorganic nanomaterials	Electrodeposition technique, factors, preparation of compound thin film.
Month: May			Module/Unit:	Sub-units planned
04	-	04	Advanced synthetic methods of inorganic nanomaterials	Successive ionic layer adsorption and reaction method, factors, Co precipitation.
Month: June			Module/Unit:	Sub-units planned
02	-	02	Advanced synthetic methods of inorganic nanomaterials	Synthesis of Gold nanoparticles, synthesis of Rhodium nanoparticles Microemulsions, amphiphilic molecules in liquids.



Miss. S. N. Inamdar

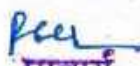


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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. I Sem-I

Department: Chemistry

Subject: Chemistry

Course Title: Physical chemistry

Name of the Teacher: Miss. P.A.Gholap

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Molecular Spectroscopy	<ul style="list-style-type: none"> • Rotation spectra: Classification of molecules based on moment of inertia, rigid rotor, most intense line, isotopic effect on the rotational spectra, non-rigid rotator, diatomic molecules, linear triatomic molecules, symmetric top molecules, stark effect. • Infra-red spectroscopy: Diatomic molecule, selection rule, anharmonicity, Morse potential, justifying the form of Morse potential, combinations of overtones, and hot bands in polyatomic molecules. • Vibrational rotational Spectra: fine structure in diatomic molecules, breakdown of the Born Oppenheimer approximation, effect due to nuclear spin, parallel and perpendicular vibrations. • Numerical problems.
15	-	15		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemistry of Polymers	<ul style="list-style-type: none"> • Introduction, Classification and Mechanism of polymerization (Chain and Step), molecular weight & size of polymer molecules, average molecular weight- Number, weight and viscosity average, methods of determining molecular weights (Osmometry, viscometry, light scattering, diffusion and ultracentrifugation), Degree of polymerization and molecular weight, polydispersity and molecular weight distribution in polymers, practical significance of polymer molecular weight, Glass transition temperature, determination of glass transition temperature and affecting factors, plasticizers. Polymer processing techniques, conducting polymers-classification and applications, Flory-Huggins Theory. • Numerical problems. • Rubber • Introduction-concentration and coagulation of Latex-classification, • Types of Rubber modification of natural rubber, terminology, mixing mechanism and types of
15	12	27		

Month: October			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Colloids and surface phenomena	<ul style="list-style-type: none"> • Colloidal Systems-Sols, Lyophilic and lyophobic sols, properties of sols, coagulation. • Sols of surface-active reagents, surface tension and surfactants • Electrical phenomena at interfaces including electrokinetic effects, micelles, reverse micelles, solubilization. • Thermodynamics of micellization, critical micelle concentration, factors affecting critical micelle concentration (cmc), experimental methods of cmc determination, Micellar catalysis. • Adsorption, adsorption isotherms, methods for determining surface structure and composition, BET equation, surface area determination, Gibbs adsorption equation and its verification. • Application of photoelectron spectroscopy, ESCA and Auger spectroscopy to the study of surfaces. • Numerical Problems
15	12	27		
Month: November			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Thermodynamics	<ul style="list-style-type: none"> • Introduction • revision of basic concepts • Entropy and third law of thermodynamics. • Methods of determining the practical absolute entropies. Entropies of phase transition. • Maxwell relations and its applications, thermodynamic equation of state. • Ideal and non-ideal solutions • Thermodynamics of nonelectrolyte solutions. • Raoult's law. • Duhem-Margules equation and its applications to vapor pressure curves (Binary liquid mixture). • Gibbs-Duhem equation and its applications to study of partial molar quantities. • Chemical potential, variation of chemical potential with temperature & pressure. • Henry's law. • Excess and mixing thermodynamic properties. • Equilibrium constants and general conditions of equilibrium in terms of thermodynamic potentials. • Numerical Problems
12	8	20		

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. I Sem-I Department: Chemistry

Subject: Chemistry

Course Title: Chemistry Practicals

Name of the Teacher: Miss. P.A.Gholap

Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none"> Kinetics of reaction between bromate and iodide. Determination of solubility and solubility product of silver halides by potentiometrically. Determination of mixture of acids and relative strength of weak acids by conductometrically.
-	12	12		
Month: October			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none"> Study of adsorption of acetic acid on charcoal. Determination of binary mixture of weak and strong acid by potentiometrically. Determination of dissociation constant of dibasic acid.
-	12	12		
Month: November			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none"> To determine the partial molar volume of ethyl alcohol in the mixture of ethyl alcohol and water. To determine the normality of acid in the given mixture of strong acid and water.
-	08	08		

P.A.Gholap

Miss. P.A.Gholap

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. I Sem-II Department: Chemistry

Subject: Chemistry

Course Title: Physical chemistry

Name of the Teacher: Miss. P.A.Gholap

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Photochemistry	<ul style="list-style-type: none"> • Absorption of light and nature of electronic spectra • Electronic transition, Frank-Condon principles • Electronic structure of molecules, • Construction of Jablonski diagram, • Electronic transitions and intensity of absorption bands, photo-physical pathways of excited molecular system (radiative and nonradiative), • Delayed fluorescence and phosphorescence, • fluorescence quenching • Concentration quenching, quenching by excimer and exciplex emission. • Stern-Volmer relation, critical energy transfer distances, energy transfer efficiency, examples and analytical significance • Bimolecular collisional V quenching and Stern-Volmer equation. • Photochemistry of environment: • Greenhouse effect, • Numerical problems.
15	-	15		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Electrochemistry	<ul style="list-style-type: none"> • Types of electrodes • Activity and Activity coefficients: forms of activity coefficients and their interrelationship, • Determination of activity coefficients of an electrolyte using concentration cells • Instability constant of silver ammonia complex. • Acid and alkaline storage batteries • Abnormal ionic conductance of hydroxyl and hydrogen ions. • Electrokinetic phenomena: Electrical double layer, theories of double layer-Helmholtz-Perrin theory, • Gouy and Chapman theory, Stern theory. • electro-capillary phenomena, electrocapillary curve. • Electro-osmosis, electrophoreses.
15	12	27		

				<ul style="list-style-type: none"> • Streaming and Sedimentation potentials. • Zeta potentials and its determination by electrophoresis, influence of ions on Zeta potential. • Numerical problems.
Month: April			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemical Kinetics	<ul style="list-style-type: none"> • Introduction to basic concepts • Experimental methods of following kinetics of a reaction, chemical and physical (measurement of pressure, volume, EMF, conductance, diffusion current and absorbance) methods and examples. • Steady state approximation and study of reaction between NO₂ and F₂, decomposition of ozone, and nitrogen pentoxide. • Ionic reaction: Primary and secondary salt effect, • Catalysis: Classification of catalysis, mathematical expression of autocatalytic reactions, Michaelis–Menten enzyme catalysis, • Homogeneous catalysis: acid and base catalysed reactions • Heterogeneous catalysis: Adsorption of gas on a surface and its kinetics, • Catalysed hydrogen-deuterium exchange reaction. • Numerical problems.
15	12	27		
Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Introduction to Spectroscopy	<ul style="list-style-type: none"> • Introduction, • region of electromagnetic radiations • Definitions and units of wavelength, frequency, energy, amplitude, wave number and their relations, Interactions of radiation with matter, rotational, vibrational, electronic energy levels, • Types of spectroscopy methods • Electronic spectroscopy, Diatomic molecules, selection rules, breakdown of selection rules, • Franck-Condon factors • Dissociation energies, Photoelectron spectroscopy of diatomic (N₂) and simple polyatomic molecules (H₂O, Formaldehyde), • Adiabatic and vertical ionization energies, • Koopman's theorem. • Numerical problems. • Raman spectroscopy • Rayleigh and Raman scattering, quantum and classical theories of Raman Effect, pure rotational Raman spectra of linear and symmetric top molecules, Raman activity of
15	08	20		

				vibrations, rule of mutual exclusion, vibrational Raman spectra, and rotational fine structure
Month: June				Practical and Theory Examination

P. Gholap
Miss. P.A.Gholap

S. D. Shrike

Dr. S. D. Shrike
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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Dept. of Chemistry
Vivekanand College, Kolhapur

Academic Year: 2022-23

Semesters: M.Sc. I Sem-II Department: Chemistry

Subject: Chemistry

Course Title: Chemistry Practicals

Name of the Teacher: Miss. P.A.Gholap

Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
-	12	12	-	<ul style="list-style-type: none"> To investigate the kinetics of iodination of acetone. Construct the phase diagram of three components system containing ethanol, benzene and water. Titration of mixture of tetra acetic acid by sodium hydroxide.
Month: April			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
-	12	12	-	<ul style="list-style-type: none"> To determine the latent heat of fusion. To verify Onsager equation at low concentration for 1:1 type electrolyte concentration. To determine the amount of each halide in given mixture by titrating it against AgNO_3
Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total		
-	08	08	-	<ul style="list-style-type: none"> Determination of the redox potential of $\text{Fe}^{3+}/\text{Fe}^{2+}$ system by potentiometrically. To determine the radius of molecule by viscosity measurements.
	Month: June			Practical and Theory Examination

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Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. II, Sem-III

Department: Chemistry

Subject: Chemistry

Course Title: Inorganic Chemistry (Material science)

Name of the Teacher: Miss.P.A.Gholap

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Catalysis	<ul style="list-style-type: none"> Basic principle Thermodynamic and Kinetic aspects, Industrial requirements, classification, Theories of catalysis, Homogeneous and heterogeneous catalysis, Types and characteristics of substrate-catalyst interactions, Kinetics and energetic aspects of catalysis, Selectivity, Stereochemistry, orbital symmetry and reactivity.
4	-	4		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Catalysis	<ul style="list-style-type: none"> Theories of catalysis, Homogeneous and heterogeneous catalysis, Types and characteristics of substrate-catalyst interactions, Kinetics and energetic aspects of catalysis, Selectivity, Stereochemistry, orbital symmetry and reactivity.
4	-	4		
Month: October			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Catalysis	<ul style="list-style-type: none"> Catalytic reactions of coordination and Organometallic compounds including polymerization activation of small molecules, addition to multiple bonds.
4	-	4		
Month: November			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Catalysis	<ul style="list-style-type: none"> Zeigler-Natta polymerization of olefins, Monsanto acetic acid process.
3	-	3		
Month: December				<ul style="list-style-type: none"> Practical and theory Examination

P.A.Gholap
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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc.II, Sem-IV

Department: Chemistry

Subject: Chemistry

Course Title: Energy and Environmental Chemistry

Name of the Teacher: Miss.P.A.Gholap

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Energy Storage Devices (Batteries)	<ul style="list-style-type: none"> Li ion Batteries: Principle of operation, Battery components and design Electrode material (LiCoO₂, LiNiO₂, LiNi_{1/3}Mn_{1/3}Co_{1/3}O₂, LiMn₂O₄, LiFePO₄, graphitic carbon) their synthesis and characterization
4	-	4		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Energy Storage Devices (Batteries)	<ul style="list-style-type: none"> Characterization, Theoretical capacity, Energy density, power density, cycle life, electrode. Battery fabrication, battery modules and packs, Li-polymer batteries and applications,
4	-	4		
Month: April			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Energy Storage Devices (Batteries)	<ul style="list-style-type: none"> Electrolytes for Li-ion batteries, Other solid-state batteries, Future developments and beyond lithium batteries: Li-S battery, Li-air battery, Advanced Lead - acid batteries, sodium batteries, Battery Recycling technologies.
4	-	4		
Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Energy Storage Devices (Batteries)	<ul style="list-style-type: none"> Battery Recycling technologies.
3	-	3		

P.A.Gholap

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S.D. Shirke

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Head

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Vivekanand College, Kolhapur

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23 Semesters: B.Sc. I (A), Sem-II Department: Chemistry

Subject: Chemistry

Course Title: DSC-1002B: Analytical Chemistry

Name of the Teacher: Miss. Nikita Dattatray Pujari

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	Chromatography	Introduction, Basic principle of chromatography, Basic terms used in chromatography.
04	16	20		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chromatography	Classification of chromatography, Paper chromatography, application, advantages & disadvantages.
04	16	20		
Month: April			Module/Unit:	Sub-units planned
04	16	20	Chromatography	Thin layer Chromatography, applications, advantages & disadvantages, comparison of paper and thin layer chromatography.
Month: May			Module/Unit:	Sub-units planned
04	16	20	Dairy Chemistry	Introduction, constituents of Milk and their physicochemical properties, milk carbohydrate, milk fat, milk protein, vitamins and minerals in milk.
Month: June			Module/Unit:	Sub-units planned
04	-	04	Dairy Chemistry	Enzymes in milk, milk processing, definition and composition of dairy products.

N. D. Pujari

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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. II (A+B), Sem-IV

Department: Chemistry

Subject: Chemistry

Course Title: DSC-1002C-Part-I: Inorganic Chemistry

Name of the Teacher: Miss. Nikita Dattatray Pujari

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	P- block elements	• Introduction, Group 15 – nitrogen family, Electronic configuration, atomic and ionic radii.
04	16	20		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	P- block elements	• Group 16- oxygen family, Electronic configuration, periodic trends.
04	16	20		
Month: April			Module/Unit:	Sub-units planned
04	16	20	P- block elements	• Allotropic forms phosphorous and sulphur. oxoacids of Nitrogen, phosphorous and sulphur.

N. D. Pujari

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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. I (A+B+C), Sem-I

Department: Chemistry

Subject: Chemistry

Course Title: DSC-1002A: Inorganic & Organic Chemistry

Name of the Teacher: Mr. Satish Suresh Kadam

Month: August			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Introduction	<ul style="list-style-type: none"> General Introduction Discussion on Syllabus Basic terms in organic Chemistry
06	-	06		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Fundamentals of Organic Chemistry	<ul style="list-style-type: none"> General introduction Reactive Intermediates: Carbocations, Carbanions and free radicals
12	16	28		
Month: October			Module/Unit:	Sub-units planned
12	16	28	Fundamentals of Organic Chemistry	<ul style="list-style-type: none"> Physical Effects, Electronic Displacements: Inductive Effect, Electromeric Effect, Resonance and Hyperconjugation. Cleavage of Bonds Homolysis and Heterolysis Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles.
Month: November			Module/Unit:	Sub-units planned
12	16	28	Aldehydes and Ketones	<ul style="list-style-type: none"> General introduction Reactions – Reaction with HCN, ROH, NaHSO₃. Preparation: from acid chlorides and from nitriles
Month: December			Module/Unit:	Sub-units planned
06	08	14	Aldehydes and Ketones	<ul style="list-style-type: none"> Iodoform test. Aldol Condensation, Cannizzaro's reaction, Wittig reaction, Benzoin condensation. Clemensen reduction and Wolff Kishner reduction. Meerwein-Ponndorf Verley reduction.

Mr. S. S. Kadam

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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. I, Sem-II

Department: Chemistry


Subject: Chemistry

Course Title: DSC-1002B: Physical and Analytical & Industrial Chemistry

Name of the Teacher: Mr. Satish Suresh Kadam

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemical Kinetics	<ul style="list-style-type: none"> • Introduction • Terms in Chemical Kinetics
6		6		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Chemical Kinetics	<ul style="list-style-type: none"> • Factors affecting on Rate of reaction • First order reaction • First order reaction Expression
12	16	28		
Month: April			Module/Unit:	Sub-units planned
12	16	28	Chemical Kinetics	<ul style="list-style-type: none"> • Problems Based on Chemical Kinetics
Month: May			Module/Unit:	Sub-units planned
	16	16	-	-
Month: June			Module/Unit:	Sub-units planned
	8	8	-	-


Mr. S. S. Kadam


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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. II, Sem-IV

Department: Chemistry


Subject: Chemistry

Course Title: DSC-1002D: Inorganic and Organic Chemistry

Name of the Teacher: Mr. Satish Suresh Kadam

Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Carboxylic acids and their derivatives	<ul style="list-style-type: none"> Introduction Carboxylic acids (aliphatic and aromatic) Preparation: Acidic and Alkaline hydrolysis of esters.
4	-	4		
Month: June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Carboxylic acids and their derivatives	<ul style="list-style-type: none"> Reactions: Hell -Vohlard - Zelinsky Reaction. Carboxylic acid derivatives (aliphatic) :Preparation preparation of Esters with mechanism Comparative study of nucleophilicity of acyl derivatives
4	32	36		
Month: July			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Carboxylic acids and their derivatives	<ul style="list-style-type: none"> Reformatsky Reaction Perkin condensation with mechanism and their applications.
4	32	36		
Month: February			Module/Unit:	Sub-units planned
-	-	-	-	-


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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. III, Sem-V

Department: Chemistry

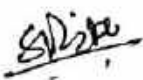
Subject: Chemistry

Course Title: DSE-1002E1: Physical & Inorganic Chemistry
DSE-1002E2: Organic & Analytical Chemistry

Name of the Teacher: Mr. Satish Suresh Kadam

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Name reactions	
04	-	04		<ul style="list-style-type: none"> • Introduction. • Beckmann, • Benzilic acid,
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Name reactions	
08	52	60		<ul style="list-style-type: none"> • Baeyer Villiger, • Diels -Alder reaction, • Mannich Reaction, • Michael Reaction,
Month: October			Module/Unit:	Sub-units planned
08	52	60	Name reactions	<ul style="list-style-type: none"> • Fries, • Dienone-Phenol rearrangement • Problems based on reactions.
Month: November			Module/Unit:	Sub-units planned
08	52	60	Electrophilic and nucleophilic substitution reactions of Aromatic Compounds	<ul style="list-style-type: none"> • Chemical properties of the following compounds with reference to electrophilic and nucleophilic substitution: • Naphthalene,
Month: December			Module/Unit:	Sub-units planned
03	13	16	Electrophilic and nucleophilic substitution reactions of Aromatic Compounds	<ul style="list-style-type: none"> • Furan, Pyrrole, • Thiophene, and Pyridine


Mr. S. S. Kadam


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Annual Teaching Plan

Academic Year: 2022-23

Semesters: B.Sc. III, Sem-VI

Department: Chemistry

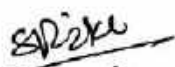
Subject: Chemistry

Course Title: DSE-1002F1: Physical & Inorganic Chemistry
DSE-1002F2: Organic & Industrial Chemistry

Name of the Teacher: Mr. Satish Suresh Kadam

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Introduction to Spectroscopy	<ul style="list-style-type: none"> • Meaning of spectroscopy, • Nature of electromagnetic radiation - wave length, frequency, energy, amplitude, wave number, and their relationship, , • Types of spectroscopy and advantages of spectroscopic methods. • Energy types and energy levels of atoms and molecules.
06	-	06		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Ultra-Violet (UV) Spectroscopy	<ul style="list-style-type: none"> • Introduction, Beer-Lamberts law • , Terms used in U.V. Spectroscopy- Chromophore, Auxochrome, Bathochromic shift, hypsochromic shift, hyperchromic and hypochromic effect, • Modes of electromagnetic transitions. Effect of conjugation on position of U.V. band,
8	52	60		
Month: April			Module/Unit:	Sub-units planned
8	52	60	Ultra-Violet (UV) Spectroscopy	<ul style="list-style-type: none"> • Calculation of λ-max by Woodward and Fisher rules for dienes and enones systems, • Colour and visible spectrum, • Applications of U.V. Spectroscopy
Month: May			Module/Unit:	Sub-units planned
6	-	06	Combined problems based on NMR, IR, UV	<ul style="list-style-type: none"> • IR Sampling, Factors affecting on IR absorption frequency, Characteristic of I.R. absorption of following functional (8) 22 groups


Mr. S. S. Kadam


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Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. I, Sem-I


Department: Chemistry


Subject: Chemistry

Course Title: Paper No. 1132A: Organic Chemistry

Name of the Teacher: Mr. Satish Suresh Kadam

Month: August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Elimination Reaction & Study of Following reaction	<ul style="list-style-type: none"> ▪ Introduction ▪ E1,E2&E1cb elimination
02	-	02		
Month: September			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Elimination Reaction & Study of Following reaction	<ul style="list-style-type: none"> ▪ Orientation in elimination ▪ Hofmann Vs Saytzeff ▪ Pyrolytic reaction ▪ Reactive effect of substrate
04	-	04		
Month: October			Module/Unit:	Sub-units planned
04	-	04	Elimination Reaction & Study of Following reaction	<ul style="list-style-type: none"> ▪ Schmidt reaction ▪ Curtius ▪ Lossen ▪ Prins ▪ Orton
Month: November			Module/Unit:	Sub-units planned
04	-	04	Elimination Reaction & Study of Following reaction	<ul style="list-style-type: none"> ▪ Hofmann-Martius ▪ Mitsunubu ▪ Baylis Hillmann ▪ Arndt Eistert
Month: December			Module/Unit:	Sub-units planned
02	-	02	Elimination Reaction & Study of Following reaction	<ul style="list-style-type: none"> ▪ Biginelli ▪ Duff ▪ darzen


Mr. S. S. Kadam


Dr. S. D. Shinde
Head
Dept. of Chemistry
Vivekanand College, Kolhapur

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2022-23

Semesters: M.Sc. I, Sem-II


Department: Chemistry

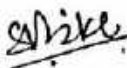
Subject: Chemistry

Course Title: Paper No. 1138B- Organic Chemistry

Name of the Teacher: Mr. Satish Suresh Kadam

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Reduction & Protection of Functional group	<ul style="list-style-type: none"> ▪ Catalytic Hydrogenation ▪ Wolff-Kishner Reduction
02	-	02		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Reduction & Protection of Functional group	<ul style="list-style-type: none"> ▪ DIBAL-H ▪ Sodium borohydride ▪ LiAlH₄
04	-	04		
Month: April			Module/Unit:	Sub-units planned
04	-	04	Reduction & Protection of Functional group	<ul style="list-style-type: none"> ▪ Sodium in Alcohol ▪ Fe in HCl ▪ Birch reduction
Month: May			Module/Unit:	Sub-units planned
04	-	04	Reduction & Protection of Functional group	<ul style="list-style-type: none"> ▪ Principle of Protection of Group ▪ Protection of Alcohol ▪ Protection of Amine ▪ Protection of Carbonyl
Month: June			Module/Unit:	Sub-units planned
02	-	02	Reduction & Protection of Functional group	<ul style="list-style-type: none"> ▪ Protection of Carboxylic acid


Mr. S. S. Kadam


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