

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan (Online Teaching)

Academic Year - 2020-21

Semester- I , III and V

Department- Chemistry

Subject – Chemistry,

Course Title – Organic Chemistry

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

Month – October (3 weeks)			Module Unit	Sub-Units Planned
B.Sc.I : A+C Div. Lectures	Practicals	Total		
06	12	18	<p>1) Stereochemistry of Organic compounds</p> <p>2.) Aromatic Hydrocarbons</p> <p>3) Ethers -</p> <p>4) Alkanes and Alkenes</p> <p>5) Alcohols and Phenols</p>	<p>Introduction, Stereoisomerism –Optical isomerism, Enantiomers and diastereoisomers, E and Z nomenclature, R and S nomenclature D and L, Threo and Erythro.</p> <p>Aromaticity, Classification, Structure of Benzene, VBT, Electrophilic substitution reactions-Nitration, Sulphonation, Halogenation, Friedal Craft's Alkylation, Acylation.</p> <p>Structure, Types, Reactivity, Preparation methods and Chemical reactions.</p> <p>Preparation methods, Reactivity, characteristic reactions of both alkanes and alkenes.</p> <p>Definition, structure, classification, Preparation methods and chemical reactions for both- Alcohols and Phenols.</p>
B.Sc.II : Lectures	Practicals	Total	Topic: Practical –	
			<p>(1.Preparation of p-Nitroacetanilide from acetanilide.</p> <p>2. Preparation of Methyl Orange)</p>	<p>1.Preparation of p- Nitroacetanilide from acetanilide</p> <p>2. Preparation of Methyl Orange</p>

06	24	30	<p>Theory –</p> <p>1) Amino acids, Peptides and Proteins</p> <p>2) Amines and Diazonium salts</p>	<p>Introduction, Amino acids, Examples, and Classification of amino acids.</p> <p>Peptides –mono, Di, Tri...Poly..</p> <p>Proteins- Structure, Types of protein structures- Secondary and Tertiary and Quaternary</p> <p>Amines-Classification,- Prim., Sec., and tertiary, Preparation methods and chemical reactions</p> <p>Diazonium Salts – Preparation methods, and reaction</p> <p>Preparation of Congo red</p>
B.Sc.III: Lectures	Practicals	Total		
06	21	27	<p>1) Natural Products – Terpenoids and Alkaloids</p> <p>2) Pharmaceuticals</p>	<p>Introduction, Isolation methods and Classification of terpenoids,</p> <p>General methods for identification of structure of terpenoids .</p> <p>Citral – Analytical and Synthetic Evidence</p> <p>Alkaloids.- Classification, extraction and isolation</p> <p>Analytical and synthetic evidence of Nicotine</p> <p>Definition, Ideal Drug, Classification and synthesis of some selected drugs- Benzocaine, phenobarbital, Isoniazid, Ethophan...etc.</p>
M.Sc.II: Lectures	Practicals	Total		
03	12	15	<p>Paper-Advanced Synthetic methods – Unit : Use of following in the synthesis .</p>	<p>Introduction, Use of Merrifield Resin in Polypeptide synthesis – Structure, Preparation of Merrifield resin., Multicomponent reactions, Ionic Liquid</p> <p>Electro-organic synthesis, Microwave reaction</p> <p>Ultrasound- sonochemistry.</p>

S.D. Shirke

Dr. Mrs. Shirke S. D.

Name and Signature of the Teacher

D. B. Patil

Dr. D. B. Patil

Name and Signature of HOD

Head
Dept. of Chemistry
Vivekanand College Kolhanur



Academic Year – 2020-21, Programme : B.Sc. Semester – II, IV and VI

Department- Chemistry Subject – Chemistry, Course Title – Organic

Chemistry

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

Month – November (3 weeks)			Module Unit	Sub-Units Planned
B.Sc.I : Lectures	Practicals	Total		
06	21	27	Organic chemistry syllabus not involved in this semester.	-----
B.Sc.II :Lectures	Practicals	Total		
06	24	30	Organic chemistry syllabus not involved in this semester	... -----
B.Sc.III:Lectures	Practicals	Total		
06	21	27	1.NMR spectroscopy 2. Sugar and Jaggary Manufacturing	Principle, Terms involved-Spinning nuclei, magnetic moment, precessional frequency, nuclear resonance, Chemical shift-Factors affecting chemical shift, spin-spin coupling, coupling constant, peak area...Problems. Extraction of Juice,, Clarification, Concentration, crystallization and centrifugation, Refining of sugar, Byproducts of sugar industry Jaggary manufacture, Bacterial testing by yeast.
M.Sc.II:Lectures	Practicals	Total		
03	12	15	1. i) Agrochemicals	Introduction, Classification... Carbamates-.Carbamate esticides: Introduction and synthesis of carbaryl, carbofuran, Baygon, Aldicarb, Ziram, Zineb. b. Organophosphorus pesticides: Malathion, monocrotophos, dimethoate, phorate, mevinphos, chloropyriphos. c.

				<p>Natural and synthetic pyrethroids: Isolation and structures of natural allethrin, fenvalerate, cypermethrin. d. Plant growth regulators: General survey and synthesis of simple compounds and applications. e. Insect repellents: f. Juvenile hormone: introduction & structures JHA importance synthesis g. Pheromones: introduction, examples, and importance in IPM. Synthesis of juvabione bombykol, grandisol and disparlure.</p>
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SD Shirke

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D. B. Patil

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Vivekanand College, Kolhanur



Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year - 2020-21

M.Sc I and II Sem. I, III

Department- Chemistry

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

Month – March 2021

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

: Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	--	04	Reaction mechanism	Introduction 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	Practicals	Total	Module Unit	Sub-Units Planned
16	32	48	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.

Month – April 2021

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

: Lectures	Practicals	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	Practicals	Total	Module Unit	Sub-Units Planned
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 cephalosporin, Structural features of tetracycline & macrocyclic antibiotics (no synthesis).
			Study of the Following types of drugs	a) Antimalerials b) Analgesic & Antipyretics c) Anti-inflammatory d) Antitubercular & antileprotic e) Anaesthetics f) Antihistamines g) Tranquilizer h) Anti AIDS Cardiovascular: j) Anti-neoplastic drugs

Month – May 2021

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

: Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	--	04	Aromatic Electrophilic Substitutions	Introduction, the arenium ion mechanism, orientation Sulphonation, Friedel-Crafts and Halogenation. The ortho/para ratio, ipso attack, concept of aromaticity, Diazo-coupling, Vilsmeier Haak reaction, Von Richter rearrangement. Nucleophilic aromatic substitution reactions SN 1, SN2

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

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
16	32	48	Heterocycles a) Five membered Heterocycles	Synthesis and reactions of Furan, benzofurans, Pyrrol, benzopyrroles, Thiophene, Benzothiophenes.

Month – June 2021

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

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

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

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
12	24	36	Practical	Estimation of various drug and chemicals

Name & Signature of Teacher

Name & Signature of HOD



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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year - 2020-21

M.Sc I and II Sem. II, IV

Department- Chemistry

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

Month – July 2021

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

: Lectures	Practicals	Total	Module Unit	Sub-Units Planned
06	--	06	Practical	Estimation of various drug and chemicals

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

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
12	32	44	Benzenoid and Non benzenoid aromatic Compounds	a) Polycyclic aromatic compounds: Synthesis, reactions, Linear and non-linear ortho fused polynuclear hydrocarbons.

Month – August 2021

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

: Lectures	Practicals	Total	Module Unit	Sub-Units Planned
08	--	08	a) Oxidation	Oxidation of alcohol to aldehyde, ketone or acid: Jones reagent, Swern oxidation, Collins reagent, Fetizon's reagent, PCC, PDC, IBX, Activated MnO ₂ , Chromyl chloride (Etard reaction), TEMPO, NMO, Moffatt oxidation .

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

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
12	48	60	Benzenoid and Non benzenoid aromatic Compounds	b) Introduction to Aromaticity and anti-aromaticity, Non- benzenoids compounds, Three and five membered carbocyclic compounds, Crown ether complexes, cyclodextrins, cryptands, catenanes and rotaxanes.

Month – September 2021

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

: Lectures	Practicals	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	Practicals	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 – June

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

: Lectures	Practicals	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.

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

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
12	24	36	Dyes and Intermediates	Problems: Simple problems based on AAS and ICP Classification and synthesis of important dye intermediates by using nitration, sulphonation, diazotization reactions. Commercial processes for azo-dyes, reactive dyes, optical brighteners, thermal sensitive dyes, dispersed dyes and reactive dyes.

S. Singh

Name & Signature of Teacher

Abpati

Name & Signature of HOD

Head

Dept. of Chemistry

Vivekanand College Kolhanur



Annual Teaching Plan

Academic Year:2020-21

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: November			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Induction	<ul style="list-style-type: none"> • General Introduction • Discussion on Course Structure • Discussion on Syllabus
06	-	06		
Month: December			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Fundamentals of Organic Chemistry	<ul style="list-style-type: none"> • General introduction • Reactive intermediates • Nucleophiles and electrophiles. • Electronic Displacements
12	16	28		
Month: January			Module/Unit:	Sub-units planned
12	16	28	Fundamentals of Organic Chemistry	<ul style="list-style-type: none"> • Cleavage of Bonds • Physical Effects • Strength of organic acids and bases.
Month: February			Module/Unit:	Sub-units planned
12	16	28	Alkenes	<ul style="list-style-type: none"> • Elimination reactions: Introduction • Saytzeff's Rule • Birch reduction). • Partial catalytic hydrogenation) • cis-addition (alk. KMnO₄) and trans-addition
Month: March			Module/Unit:	Sub-units planned
06	08	14	Alkenes	<ul style="list-style-type: none"> • Addition of HX • Hydration • Ozonolysis • oxymercuration-demercuration • Hydroboration-oxidation

S.S.Kadam

Mr. S.S.Kadam

(Assistant Professor)

D.B.Patil

Dr.D.B. Patil

(Head of Dept)

Head

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Vivekanand College Kolhapur



Annual Teaching Plan

Academic Year: 2020-21 Semesters: B.Sc. I (A+B+C), Sem-II Department: Chemistry

Subject: Chemistry Course Title: DSC-1002B: Physical & Organic Chemistry

Name of the Teacher: Mr. Satish Suresh Kadam

Month: April			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	Halides	<ul style="list-style-type: none"> Alkyl Halides :Introduction, Types of Nucleophilic Substitution Preparation of Alkyl Halides Williamson's ether synthesis Reactions: hydrolysis, nitrite & nitro formation, nitrile & isonitrile formation
06	-	06		
Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Halides	<ul style="list-style-type: none"> Aryl Halides :Preparation Sandmeyer & Gattermann reactions Aromatic nucleophilic substitution Reactivity and Relative strength of C-Halogen bond in alkyl, allyl, benzyl, vinyl and aryl halides.
12	16	28		
Month: June			Module/Unit:	Sub-units planned
12	16	28	Ethers/ Aldehydes and Ketones	<ul style="list-style-type: none"> Preparation Reactions of ethers Cleavage of ethers with HI. Introduction
Month: July			Module/Unit:	Sub-units planned
12	16	28	Aldehydes and Ketones	<ul style="list-style-type: none"> Preparation Reaction with HCNs Iodoform test. Aldol Condensation, Clemensen reduction and Wolff Kishner reduction
Month: August			Module/Unit:	Sub-units planned
06	08	14	Aldehydes and Ketones	<ul style="list-style-type: none"> Cannizzaro's reaction Wittig reaction Meerwein-Pondorff Verley reduction Benzoin condensation

S.S.Kadam

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Vivekanand College, Kolhapur

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2020-21 Semesters: B.Sc. II, Sem-III Department: Chemistry

Subject: Chemistry Course Title: DSC-2C Physical & Organic Chemistry

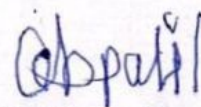
Name of the Teacher: Mr. Satish Suresh Kadam

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) • <i>Preparation:</i> 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"> • <i>Reactions:</i> Hell -Vohlard - Zelinsky Reaction. • Carboxylic acid derivatives (aliphatic) :<i>Preparation</i> • preparation of Esters with mechanism • Comparative study of nucleophilicity of acyl derivatives
4	-	04		
Month: July			Module/Unit:	Sub-units planned
4	-	04	Carboxylic acids and their derivatives	<ul style="list-style-type: none"> • Reformatsky Reaction • Perkin condensation with mechanism and their applications.
Month: August			Module/Unit:	Sub-units planned
-	-	-	-	-



Mr. S.S.Kadam

(Assistant Professor)

Dr.D.B. Patil

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Vivekanand College, Kolhapur

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2020-21

Semesters: B.Sc. III, Sem-V

Department: Chemistry

Subject: Chemistry

**Course Title: DSE-1002E: Inorganic & Physical Chemistry
DSE-1002F: Organic & Analytical Chemistry**

Name of the Teacher: Mr. Satish Suresh Kadam

Month: November			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Name Reactions	<ul style="list-style-type: none"> • Introduction. • Beckmann, Benzilic acid, Baeyer Villiger, Diels - Alder reaction,.
06	-	06		
Month: December			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Name Reactions	<ul style="list-style-type: none"> • Mannich Reaction, Michael Reaction, Fries, Dienone-Phenol rearrangement, Problems based on reactions
12	52	64		
Month: January			Module/Unit:	Sub-units planned
12	52	64	Synthetic Reagents	<ul style="list-style-type: none"> • DDQ, OsO₄, N-bromosuccinamide, Zn-Hg, DCC,
Month: February			Module/Unit:	Sub-units planned
12	52	64		<ul style="list-style-type: none"> • LiAlH₄, CAN, Raney Ni, Diazomethane
Month: March			Module/Unit:	Sub-units planned
06	13	19	Combined problems	<ul style="list-style-type: none"> • Problems based on reaction

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(Assistant Professor)

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Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2020-21

Semesters: B.Sc. III, Sem-VI


Department: Chemistry

Subject: Chemistry

Course Title: DSE-1002G: Inorganic & Physical Chemistry
DSE-1002H: Organic & Industrial Chemistry

Name of the Teacher: Mr. Satish Suresh Kadam

Month: May			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, • different units of measurement of wavelength frequency, different regions of electromagnetic radiations,
09	-	09		
Month: June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Introduction to Spectroscopy	<ul style="list-style-type: none"> • Interaction of radiation with matter-absorption, emission, florescence and scattering, • Types of spectroscopy and advantages of spectroscopic methods. • Energy types and energy levels of atoms and molecules
12	52	64		
Month: July			Module/Unit:	Sub-units planned
12	52	64	Ultra-Violet (UV) Spectroscopy	<ul style="list-style-type: none"> • ; Introduction, Beer-Lamberts law, • absorption of U.V. radiation by organic molecule leading to different excitation, • 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,
Month: August			Module/Unit:	Sub-units planned
6	-	06	Ultra-Violet (UV) Spectroscopy	<ul style="list-style-type: none"> • Effect of conjugation on position of U.V. band, Calculation of λ-max by Woodward and Fisher rules for dienes and enones systems, • Colour and visible spectrum, • Applications of U.V. Spectroscopy


Mr. S.S.Kadam

(Assistant Professor)




Dr. D.B. Patil

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Dept. of Chemistry
Vivekanand College Kolhapur

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year - 2020-21

Sem. I, III, V

Department- Chemistry

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

Month – Nov-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	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			
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			
04	--	04		Pericyclic Reactions	Molecular orbital symmetry, Frontier orbital of ethylene, 1,3- butadiene, 1,3,5-hexatriene and allyl system,

Month – January

B.Sc.ISem I

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

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

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	32	36	Phase Equilibria	Phase diagrams of onecomponent systems (water and sulphur) and two component systems involving eutectics, congruent and incongruent melting points (lead-silver, FeCl ₃ -H ₂ O and KI-Water only).

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

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
08	28	36	Molecular Spectroscopy Chromatography	Vibrational spectra of diatomic molecules: Simple Harmonic oscillator model, vibrational energies of diatomic molecules, determination of force constant, overtones. Interaction of radiation with vibrating molecules. Raman Spectra: concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules. Numerical problems Introduction, General Introduction, Basic principle of chromatography, Classification of Chromatography..

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

Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	--	04	Pericyclic Reactions	classification of pericyclic reaction, Wood-ward Hoffman correlation diagrams, FMO and PMO approach, electrocyclic reactions, conrotatory and disrotatory motions, 4n , 4n+2 and allyl systems, cycloaddition, and supra and antara facial additions, 4n and 4n+2 systems, 2+2 additions of ketenes,

Month – February

B.Sc.ISem I				
: Lectures	Practicals	Total	Module Unit	Sub-Units Planned
--	16	16		
B.Sc.IISem III :- Course Title:- Physical and Analytical Chemistry				
Lectures	Practicals	Total		
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		
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. Sc. II Sem III :- Course Title:- Organic Reaction Mechanism				
Lectures	Practicals	Total		
04	--	04	Pericyclic Reactions	1,3-dipolar cycloaddition and chelotropic reactions, sigmatropic rearrangement , supra and antarafacial shifts of H,

Month – March

B.Sc.ISem I				
Lectures	Practicals	Total	Module Unit	Sub-Units Planned
--	16	16		
B.Sc.IISem III :- Course Title:- Physical and Analytical Chemistry				
Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	32	36	Phase Equilibria Solutions	Numericals Unit Test
B.Sc.III.Sem V:- Course Title:- Physical and Analytical Chemistry				
Lectures	Practicals	Total	Module Unit	Sub-Units Planned
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	Module Unit	Sub-Units Planned
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

Dr. Undale K. A.



Dr. D. B. Patil

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Annual Teaching Plan

Academic Year - 2020-21

Sem. II, IV, VI

Department- Chemistry

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

Month – April

B.Sc.ISem 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 – May

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

B.Sc.IISem 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 – June				
B.Sc.ISem 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.IISem 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, 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 – July-August

B.Sc.ISem 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.IISem 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	Sharplessepoxidation, Diels Alder selective synthesis.

Dr. Undale K. A.



Dr. D. B. Patil

Head
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Vivekanand College Kolhapur

Department of Chemistry
Academic Year: 2020-21
Annual Teaching Plan

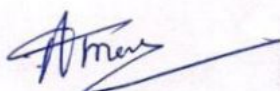
Name of the teacher: Mr. A. T. Mane

Programme : M.Sc. I Semester I

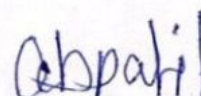
Subject: Chemistry **Course Title:** Inorganic Chemistry

Month Feb.			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 π -P π and P π -d π bonds, Bent rule, walsh diagram Back bonding, some simple reactions of covalently bonded molecules
8	12	20		
Month March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Metal ligand equilibria in solution Electroanalytical Techniques	Definition of stability constant, step wise and overall formation constant and their interaction, trends in stepwise constants, factors affecting the stability of metal Polarography:
7+5	12	24		
Month April			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Electroanalytical Techniques	Amperometry: Voltametry:
5	10	15		

Month May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Spectroscopic term symbols	Terms, Inter-electronics repulsion, spin orbit coupling, ground terms, determination of terms symbol of d_1 to d_5 Configuration / complexes, Energy ordering of terms, microstates,
4	08	12		
Month June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Spectroscopic term symbols	Orgel diagram of d_1 to d_9 configuration in an octahedral and tetrahedral environments, Correlation diagram of d_1 , d_2 , d_8 and d_9 configuration in octahedral and tetrahedral
4	08	12		
Month July			Module/Unit:	
Lectures	Practicals	Total	Nuclear and radiochemistry	Nuclear stability and nuclear binding energy, radioactivity and radioactive decay, radioactive equilibrium, classification of nuclear reactions
4	08	12		
Month August			Module/Unit:	
Lectures	Practicals	Total	Nuclear and radiochemistry	Q value, nuclear reaction cross-sections, nuclear fission, nuclear fusion, applications of radioactivity.
4	08	12		



Mr. A. T. Mane



Dr. D. B. Patil

Head
Dept. of Chemistry
 Vivekanand College, Kolhapur



Annual Teaching Plan

Academic Year: 2020-21 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: November			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: December			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	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: January			Module/Unit:	Sub-units planned
12	16	28	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: February			Module/Unit:	Sub-units planned
12	16	28	Covalent Bonding	<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: March			Module/Unit:	Sub-units planned
06	08	14	Covalent Bonding	<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^-

Name and Signature of Teacher



Name and Signature of HoD

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Vivekanand College, Kolhapur

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2020-21 Semesters: B.Sc. I (A+B+C), Sem-II Department: Chemistry

Subject: Chemistry Course Title: DSC-1002B: Physical & Organic Chemistry

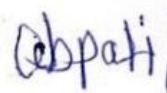
Name of the Teacher: Dr. Sanjay Shivram Ankushrao

Month: April			Module/Unit:	Sub-units planned
Lectures	Practicals hr	Total	Thermodynamics	<ul style="list-style-type: none"> Introduction, Spontaneous and nonspontaneous process with examples, Statements of second law of thermodynamics, Carnot's cycle and its efficiency
06	-	06		
Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Entropy and Third law	<ul style="list-style-type: none"> Concept of entropy, physical significance of entropy, entropy as a state function of V & T, P & T, entropy of mixing of gases, entropy change accompanying phase transition
12	16	28		
Month: June			Module/Unit:	Sub-units planned
12	16	28	Entropy and Third law	<ul style="list-style-type: none"> Third law of thermodynamics, calculation of absolute entropies.
Month: July			Module/Unit:	Sub-units planned
12	16	28	Chemical Equilibria	<ul style="list-style-type: none"> Concept of free energy, Free energy change in a chemical reaction Thermodynamic derivation of the law of chemical equilibrium. Distinction between ΔG and ΔG_0, Le Chatelier's principle
Month: August			Module/Unit:	Sub-units planned
06	08	14	Chemical Equilibria	<ul style="list-style-type: none"> Condition for maximum yield in industrial processes like manufacture of ammonia, and sulphuric acid Relationships between K_p, K_c and K_x for reactions involving ideal gases.

Name and Signature of Teacher




Name and Signature of HoD



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Vivekanand College, Kolhapur

Annual Teaching Plan

Academic Year: 2020-22 Semesters: B.Sc. II, Sem-IV Department: Chemistry

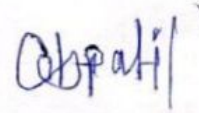
Subject: Chemistry Course Title: DSC-1002B: Physical & Organic Chemistry

Name of the Teacher: Dr. Sanjay Shivram Ankushrao

Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Crystal Field Theory	<ul style="list-style-type: none"> • Introduction • Assumptions of CFT • Crystal field stabilization energy (CFSE) • Crystal field splitting of 'd' orbital in octahedral Complexes.
4	-	4		
Month: June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Crystal Field Theory	<ul style="list-style-type: none"> • Comparison of CFSE for <i>Oh</i> and <i>Td</i> complexes • Crystal field effects for weak and strong fields ligands, Tetrahedral symmetry, • Crystal field splitting of 'd' orbital in Tetrahedral and square planar complex
4	-	04		
Month: July			Module/Unit:	Sub-units planned
4	-	04	Crystal Field Theory	<ul style="list-style-type: none"> • Jahn-Teller distortion, • Limitations of CFT. • Factors affecting the Magnitude of $10 Dq$, Spectrochemical series
Month: February			Module/Unit:	Sub-units planned
-	-	-	-	-



Name and Signature of Teacher



Name and Signature of HoD

Head
Dept. of Chemistry
Vivekanand College, Kolhapur



Annual Teaching Plan

Academic Year: 2020-21

Semesters: B.Sc. III, Sem-V

Department: Chemistry

Subject: Chemistry

Course Title: DSE-1002E: Inorganic & Physical Chemistry
DSE-1002F: Organic & Analytical Chemistry

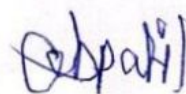
Name of the Teacher: Dr. Sanjay Shivram Ankushrao

Month: November			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⁺
06	-	06		
Month: December			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 • 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
12	52	64		
Month: January			Module/Unit:	Sub-units planned
12	52	64	Theory of Titrimetric Analysis	<ul style="list-style-type: none"> • Complexometric titration: General account • Types of EDTA titration • Metalochromic indicators w.r.t. Eriochrome Black-T indicator • Redox titrations: General introduction, theory of redox indicators, Use of diphenyl amine and ferroin as redox indicators.
Month: February			Module/Unit:	Sub-units planned
12	52	64	Qualitative and Quantitative Aspects of Analysis	<ul style="list-style-type: none"> • General introduction, Sampling techniques of solid, liquid and gases; Types of errors, determinate and indeterminate errors, constant and proportionate errors, Accuracy and precision,
Month: March			Module/Unit:	Sub-units planned
06	13	19	Qualitative and Quantitative Aspects of Analysis	<ul style="list-style-type: none"> • Measures of dispersion and central tendency: mean, median, average deviation, relative average deviation, standard deviation, variance, coefficient of variation, Numerical problems.

Name and Signature of Teacher




Name and Signature of HoD



Head
Dept. of Chemistry
Vivekanand College, Kolhapur

Annual Teaching Plan

Academic Year: 2020-21

Semesters: B.Sc. III, Sem-VI

Department: Chemistry

Subject: Chemistry

Course Title: DSE-1002G: Inorganic & Physical Chemistry
DSE-1002H: Organic & Industrial Chemistry

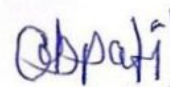
Name of the Teacher: Dr. Sanjay Shivram Ankushrao

Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Infra-Red (IR) Spectroscopy	<ul style="list-style-type: none"> Introduction, Principle of I.R. Spectroscopy, IR Instrumentation, schematic diagram, Fundamental modes of vibrations, Condition for absorption of IR radiations, Regions of I.R. Spectrum, fundamental group region, finger print region, Hooks Law for Calculation of vibrational frequency, IR Sampling, Factors affecting on IR absorption frequency, Characteristic of I.R. absorption of following functional groups Alkanes, alkenes, alkynes, Alcohol and phenols, Ethers, Carbonyl compounds, Amines, Nitro com, Aromatic Compounds.
09	-	09		
Month: June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Corrosion and Passivity	<ul style="list-style-type: none"> Introduction of corrosion Electrochemical theory of corrosion Factors affecting on corrosion, i. Position of metals in the electrochemical series on the basis of standard reduction potential ii. Purity of metal iii. Effect of moisture iv. Effect of oxygen Hydrogen overvoltage Methods of protections of metals from corrosion Passivity i. Definition ii. Types of passivity iii. Oxide film theory and evidences iv. Applications of passivity
12	52	64		
Month: July			Module/Unit:	Sub-units planned
12	52	64	Introduction to Industrial Chemistry	<ul style="list-style-type: none"> General introduction, Indian Scenario of chemical industries, types of chemical industry, basic requirements of chemical industries, chemical production and raw materials; unit processes and unit operations and its types; modes of manufacturing-batch, semi-batch and continuous process;
Month: August			Module/Unit:	Sub-units planned
6	-	06	Introduction to Industrial Chemistry	<ul style="list-style-type: none"> Introduction to various departments in industry: Quality control, Quality assurance, process development, Research and Development, Analytical development, Environmental health and safety. Industrial legislations-copy right act, patent act, trademarks; MSDS of hazardous chemicals.

Name and Signature of Teacher




Name and Signature of HoD



Head
Dept. of Chemistry
Vivekanand College, Kolhapur

Annual Teaching Plan

Academic Year: 2020-21

Semesters: B.Sc. II, Sem-IV


Department: Chemistry

Subject: Chemistry

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

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

Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Transition Elements (3d series) Lanthanoids and Actinoids	<ul style="list-style-type: none"> • Introduction • General group trends with special reference to electronic configuration, variable valency, colour, magnetic and catalytic properties and ability to form complexes. • A] Lanthanoids: Introduction, electronic configurations, oxidation states, colour and spectra, magnetic properties, lanthanide contraction,
8	-	8		
Month: June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Lanthanoids and Actinoids	<ul style="list-style-type: none"> • Occurrence and separation of lanthanides (ion exchange method only). • B] Actinoids: Introduction, position in periodic table, electronic configuration, oxidation states; • General methods of preparation of Transuranic elements- i) Neutron capture followed by β decay ii) Accelerated projectile bombardment iii) Heavy ion bombardment; • IUPAC nomenclature of the super heavy elements with atomic number (Z) greater than 100.
8	48	56		
Month: July			Module/Unit:	Sub-units planned
8	48	56	Molecular Orbital Theory [MOT]	<ul style="list-style-type: none"> • Introduction, • Salient features of MOT of octahedral complexes with sigma bonding such as $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$, $[\text{CoF}_6]^{3-}$, $[\text{Co}(\text{NH}_3)_6]^{3+}$, • Merits and demerits of MOT.
Month: August			Module/Unit:	Sub-units planned
8	-	8	Valence Bond Theory	<ul style="list-style-type: none"> • Definition and formation of co-ordinate covalent bond in $\text{BF}_3\text{-NH}_3$ and $[\text{NH}_4]^+$, • Distinguish between double salt and complex salt, Werner's theory i) Postulates, ii) theory as applied to cobalt amines complexes; • Description of the terms: ligands, co-ordination compounds, Coordination number; • IUPAC system of nomenclature, • Structural and stereoisomerism in complexes with coordination numbers 4 and 6; • Postulates of VBT, Inner and outer orbital complexes w. r. t. coordination numbers 4 and 6; Drawbacks of VBT.


Dr. Mrs. S. D. Shinde




Dr. D. B. Patil
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Vivekanand College Kolhapur

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2020-21

Semesters: B.Sc. I, Sem-II

Department: Chemistry

Subject: Chemistry

Course Title: Chemistry Practicals

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

Month: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none">• Spot Tests Detection of following cations using spot tests: Cu^{2+}, Co^{2+}, Ni^{2+}, Fe^{3+}, Al^{3+}, Zn^{2+}, Mg^{+2}, Pb^{2+}
-	36	36		
Month: June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	-	<ul style="list-style-type: none">• Water analysis: To determine the alkalinity of water sample by using Phenolphthaline and Methyl Orange Indicator• To estimate amount of Cu (II) ions by iodometric titration by using $\text{Na}_2\text{S}_2\text{O}_3$ solution
-	36	36		

Dr. Mrs. S. D. Shinde



Dr. D. B. Patil

Head

Dept. of Chemistry
Vivekanand College Kolhapur

Annual Teaching Plan

Academic Year: 2020-21

Semesters: B.Sc. III, Sem-V

Department: Chemistry

Subject: Chemistry

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

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

Month: February			Module/Unit:	Sub-units planned
4	14	18	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),
Month: March			Module/Unit:	Sub-units planned
8	42	50	Metals, Semiconductors and Superconductors	<ul style="list-style-type: none"> • 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, • Superconductors: Superconductivity, Meissner effect, • Ceramic superconductors-Preparation and structures of mixed oxide YBa₂Cu₃O₇ • Applications of superconductors.

S. D. Shinde

Dr. Mrs. S. D. Shinde

D. B. Patil

Dr.D.B.Patil

Head

Dept. of Chemistry

Vivekanand College Kolhapur



Annual Teaching Plan

Academic Year: 2020-21

Semesters: B.Sc. III, Sem-VI


Department: Chemistry

Subject: Chemistry

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

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

Month: May			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, 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
09	-	09		
Month: June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Nuclear Chemistry	<ul style="list-style-type: none"> Nuclear reactions and energetic of nuclear reactions, Types of nuclear reactions: i) Artificial transmutation ii) Artificial radioactivity iii) Nuclear fission and its application in Heavy water nuclear reactor iv) Nuclear fusion, Applications of radio-isotopes as tracers: i) Chemical investigation-Esterification ii) Structural determination-Phosphorus pentachloride iii) Analytical Chemistry-Isotopic dilution method for determination of volume of blood iv) Age determination-Dating by C_{14}.
12	42	54		
Month: July			Module/Unit:	Sub-units planned
12	49	61	Nanomaterials	<ul style="list-style-type: none"> Introduction and Importance of nanomaterials, Properties (Comparison between bulk and nanomaterials): i) Optical properties ii) Electrical conductivity and iii) Mechanical properties, Methods of preparation: Top-down, bottom-up fabrication a) Co precipitation method b) Sol-gel method c) Chemical reduction method d) Hydrothermal method, Applications of Nanomaterials.
Month: August			Module/Unit:	Sub-units planned
6	-	6	Inorganic Reaction mechanism	<ul style="list-style-type: none"> Introduction, Classification of Mechanism Association, dissociation, interchange and the rate determining steps, SN1 and SN2 reaction for inert and labile complexes, Mechanism of substitution in cobalt (III) octahedral complexes, Trans effect and its theories, Applications of trans effect in synthesis of Pt (II) complexes.


Dr. Mrs. S. D. Shinde




Dr. D. B. Patil

Head

Dept. of Chemistry
Vivekanand College Kolhapur

Annual Teaching Plan

Academic Year: 2020-21

Semesters: M.Sc. I, Sem-I

Department: Chemistry

Subject: Chemistry

Course Title: CP-1131A: Inorganic Chemistry- I

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

Month: February			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Electronic, Electric and Optical behaviour of Inorganic materials	<ul style="list-style-type: none"> • Introduction • Properties of metals, types of metallic solids • Metals, Insulators and Semiconductors, • Electronic structure of solid, band theory, • band structure of metals, insulators and semiconductors,
8	-	8		
Month: March			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Electronic, Electric and Optical behaviour of Inorganic materials	<ul style="list-style-type: none"> • Intrinsic and extrinsic semiconductors, • doping of semiconductors and conduction mechanism, the band gap, • temperature dependence of conductivity, carrier density and carrier mobility in semiconductors,
7	-	7		
Month: April			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Metal ligand equilibria in solution	<ul style="list-style-type: none"> • 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, 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.
7	-	7		

Shinde

Dr. Mrs. S. D. Shinde

Dr. D. B. Patil

Dr. D. B. Patil

Head
Dept. of Chemistry
Vivekanand College, Kolhapur



Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year: 2020-21

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: May			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Studies and applications of Lanthanides and Actinides	<ul style="list-style-type: none"> • Introduction • Electronic configuration, oxidation states • Spectral and magnetic properties, • use of lanthanide compounds as shift reagents and complex formation,
8	-	8		
Month: June			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Studies and applications of Lanthanides and Actinides	<ul style="list-style-type: none"> • Modern methods of separation of lanthanides and actinides, • Organometallic chemistry applications of lanthanide and actinide compounds in Industries.
7	-	7		
Month: July			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Reaction mechanism of transition metal complexes	<ul style="list-style-type: none"> • Classification of inorganic reactions, • ligand substitution reaction and their mechanisms of octahedral complexes, • Acid hydrolysis, factors affecting the acid hydrolysis, Base hydrolysis,
4	-	4		
Month : August			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Reaction mechanism of transition metal complexes	<ul style="list-style-type: none"> • square planar complexes, trans effect, • Electron transfer reaction: mechanism of inner and outer sphere electron transfer reactions in octahedral complexes. • Practical and theory Examination
3	-	3		

S. D. Shinde
Dr. Mrs. S. D. Shinde



D. B. Patil
Dr. D. B. Patil
Head
Dept. of Chemistry
Vivekanand College, Kolhapur

Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan 2020-21

M.Sc. I Sem I; M.Sc. II Sem. III

Department- Chemistry

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

Month – March 2021

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

04	--	04		Stereochemistry	Introduction of stereochemistry, Symmetry, Chirality, Prochiral relationship, homotopic, enantiotopic and diastereotopic groups and faces.
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M.Sc.II Sem III :- Course Title:- Organic Chemistry

Lectures	Practicals	Total		Module Unit	Sub-Units Planned
06	12	18		Applications of following metal in organic synthesis	Introduction to organometallic chemistry, applications of metals in organic synthesis such as Pd, Mg, Rh, Ti, Si, use of Cu in Click chemistry.
				Drugs and Heterocycles	a) Six membered Heterocycles with two and more Heteroatoms.

Month – April 2021

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

04	--	04		Stereochemistry	Stereochemistry of the compounds containing Nitrogen, Sulphur and phosphorous. Conformational analysis: Cyclohexane derivatives, stability and reactivity, Conformational analysis of Mono and disubstituted cyclohexanes.
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M.Sc.II Sem III :- Course Title:- Organic Chemistry

Lectures	Practicals	Total		Module Unit	Sub-Units Planned
16	32	48		Applications of following metals in organic synthesis	Pd, Rh, Ti, Si metals in organic synthesis.

Month – May 2021

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

Month-June 2021

M.Sc.II Sem III :- Course Title:- Organic Chemistry					
Lectures	Practicals	Total			
08	16	24	Six and seven membered with two and more heteroatoms	Synthesis, chemical reactions of pyridazine, pyrimidine and pyrazine. 1,2,3-triazole, 1,2,4-triazole and 1,3,5-triazole.	
			Combined spectral problems	Structural problems based on combined spectroscopic techniques (including reaction sequences)	

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Dr. D.S. Gaikwad

Name & Signature of Teacher

Abhaji

Name & Signature of HOD

Head

Dept. of Chemistry

Vivekanand College, Kolhanur



Vivekanand College, Kolhapur (Autonomous)

Annual Teaching Plan

Academic Year - 2020-21

M.Sc. I Sem II; M.Sc. II Sem. IV

Department- Chemistry

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

Month – July 2021					
M.Sc.I Sem. II:- Course Title:- Organic Chemistry-II					
: Lectures	Practicals	Total		Module Unit	Sub-Units Planned
06	--	06		Study of following reactions	a) Study of following reactions Mechanism of condensation reaction involving enolates, Dieckmann, Wagner-Meerwein, Robinson annulations.
M.Sc.II Sem IV :- Course Title:- Organic Chemistry					
Lectures	Practicals	Total		Module Unit	Sub-Units Planned
12	32	44		Vitamins	Introduction of Vitamins, Classification and nomenclature of Vitamins, Sources of vitamins and their deficiency.
Month – August 2021					
M.Sc.I Sem. II:- Course Title:- Organic Chemistry-II					
: Lectures	Practicals	Total		Module Unit	Sub-Units Planned
08	--	08		Study of following reactions	Alkylation and Acylation Introduction, Types of alkylation and alkylating agents: C-Alkylation and Acylation of active methylene compounds and their applications.
M.Sc.II Sem IV :- Course Title:- Organic Chemistry					
Lectures	Practicals	Total		Module Unit	Sub-Units Planned
12	48	60		Vitamins	Biological functions of vitamin B1, B2, B5, B6 and Biotin (Vitamin H).
				Alkaloids	Introduction, occurrence, isolation and functions of alkaloids, Structure, stereochemistry and synthesis of the following: Morphine, Reserpine.
Month – September 2021					
M.Sc.I Sem. II:- Course Title:- Organic Chemistry-II					
: Lectures	Practicals	Total		Module Unit	Sub-Units Planned
08	--	08		Organometallic compounds	Study of Organometallic compounds Organo-lithium, organo cobalt, Ce, 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.
B.Sc.I Sem I:- Course Title:- Chemistry				
Lectures	Practicals	Total	Module Unit	Sub-Units Planned
04	00	04	Ionic Equilibria	Ionic Equilibria

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Dr. D. S. Gaikwad

Name & Signature of Teacher



Abpaji

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Head
Dept. of Chemistry
Vivakanand College Kolhanur