Arts, Science and Commerce College, Indapur, Dist. Pune

TEACHING AND EVALUATION PLAN

Name of the teacher: Prof . Mane U.L **A. Year:** 2020-2021

Subject: Physical Chemistry **Semester:** III

Paper: IV CH-331 **Class:** T Y B Sc

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Nov2020	2,3 & 4	10	10	**Chemical Kinetics : [10 L]** Recapitulation of Chemical Kinetics, Third order reaction, Derivation of integrated rate law for third order reaction with equal initial concentration, characteristics of third order reaction, examples of third order reaction, Methods to determine order of reaction using Integrated rate equation method, Graphical method, Half-life method, Differential method. Effect of temperature on reaction rate, Arrhenius equation, related numerical.	10	**Chemical Kinetics : [10 L]** Recapitulation of Chemical Kinetics, Third order reaction, Derivation of integrated rate law for third order reaction with equal initial concentration, characteristics of third order reaction, examples of third order reaction, Methods to determine order of reaction using Integrated rate equation method, Graphical method, Half-life method, Differential method. Effect of temperature on reaction rate, Arrhenius equation, related numerical.	Nil	--
2	Dec 2020	1,2,3 &4	14	14	**2. Electrolytic Conductance: [14 L]** Recapitulation of Electrolytic conductance,Specific and equivalent conductance,Variation of equivalent conductance with concentration,	14	**2. Electrolytic Conductance: [14 L]** Recapitulation of Electrolytic conductance,Specific and equivalent conductance,Variation of equivalent conductance with concentration, Kohlrausch's law and its applications	Nil	--

					Kohlrausch's law and its applications to determine a. Equivalent conductance at infinite dilution of a weak electrolyte, b. The ionic product of water, c. Solubility of sparingly soluble salts, Migration of ions and ionic mobilities, absolute velocity of ions, Transport number determination by Hittorf's method and moving boundary method, Relation between ionic mobility, ionic conductance and transport number, Ionic theory of conductance, Debye-Huckel – Onsager equation and its validity, Activity in solution, fugacity and activity coefficient of strong electrolyte.		to determine a. Equivalent conductance at infinite dilution of a weak electrolyte, b. The ionic product of water, c. Solubility of sparingly soluble salts, Migration of ions and ionic mobilities, absolute velocity of ions, Transport number determination by Hittorf's method and moving boundary method, Relation between ionic mobility, ionic conductance and transport number, Ionic theory of conductance, Debye-Huckel –Onsager equation and its validity, Activity in solution, fugacity and activity coefficient of strong electrolyte.		
3	January 2021	1 &2	16	16	**3. Investigations of Molecular Structure: [16 L]** Molar refraction, Electrical polarization of molecules, Permanent dipole moment, Determination of dipole moment, Molecular spectra - Rotational, vibrational and Raman spectra Reference	16	**3. Investigations of Molecular Structure: [16 L]** Molar refraction, Electrical polarization of molecules, Permanent dipole moment, Determination of dipole moment, Molecular spectra - Rotational, vibrational and Raman spectra Reference	Nil	--
4	January 2021	3 & 4	08	8	**4. Phase Rule: [08 L]** Definitions, Gibb's phase rule, one component system (moderate pressure only) for sulphur and water system, two component system for silver-lead and zinc-	8	**4. Phase Rule: [08 L]** Definitions, Gibb's phase rule, one component system (moderate pressure only) for sulphur and water system, two component system for silver-lead and zinc-	Nil	--

					cadmium.		cadmium.		

Semester IV **Paper: IV CH-341** **Year : 2020-2021**

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	May 2021	1,2,3 & 4	14	14	**1. Electrochemical Cells [14 L]** Reversible and irreversible cells,EMF and its measurements,Standard cells, cell reaction and EMF,Single electrode potential and its calculation,Calculation of cellEMF,Thermodynamics of cell EMF,Types of electrodes,Classification of electrochemical cells with and without transference,Applications of EMFmeasurement-i)Solubility product of sparingly soluble salt,ii)Determination of pH,iii)Potentiometric titration	14	**1. Electrochemical Cells [14 L]** Reversible and irreversible cells,EMF and its measurements,Standard cells, cell reaction and EMF,Single electrode potential and its calculation,Calculation of cellEMF,Thermodynamics of cell EMF,Types of electrodes,Classification of electrochemical cells with and without transference,Applications of EMFmeasurement-i)Solubility product of sparingly soluble salt,ii)Determination of pH,iii)Potentiometric titration	Nil	--
2	June 2021	1,2,3 ,& 4	12	12	**2. Nuclear Chemistry [12 L]** The atom, nucleus and outer sphere, classification of nuclides, nuclear stability and binding	12	**2. Nuclear Chemistry [12 L]** The atom, nucleus and outer sphere, classification of nuclides, nuclear stability and binding	0	

					energy.Discovery of radioactivity, types of radioactivity, general characteristics of radioactive decay and decay kinetics,Measurements radioactivity, gaseous ion collection method, proportional and G.M. counter.		energy.Discovery of radioactivity, types of radioactivity, general characteristics of radioactive decay and decay kinetics,Measurements radioactivity, gaseous ion collection method, proportional and G.M. counter.		
3	July 2021	1,2,3 ,& 4	12	12	**3. Crystal structure [12 L]** Crystallization and fusion process,Crystallography, Crystal systems,-Properties of crystals, Crystal lattice and unit cell,-Crystal structure analysis by X ray - The Laue method and Braggs method, - X-ray analysis of NaCl crystal system, - Calculation of d and λ for a crystal system.	12	**3. Crystal structure [12 L]** Crystallization and fusion process,Crystallography, Crystal systems,-Properties of crystals, Crystal lattice and unit cell,-Crystal structure analysis by X ray - The Laue method and Braggs method, - X-ray analysis of NaCl crystal system, - Calculation of d and λ for a crystal system.		
4	August 2021	1,2& 3	10	10	**4. Quantum Chemistry [10 L]** Concept of quantization, atomic spectra (no derivation), wave particle duality, uncertainty principle, wavefunction and its interpretation, well-behaved function, Hamiltonian (energy) operator, formulation of Schrodinger equation, particle in box (1D, 2D and 3D box) (no derivations), sketching of wavefunction and probability densities for 1D box, correspondence principle, degeneracy(lifting of degeneracy), applications to conjugated systems, harmonic	10	**4. Quantum Chemistry [10 L]** Concept of quantization, atomic spectra (no derivation), wave particle duality, uncertainty principle, wavefunction and its interpretation, well-behaved function, Hamiltonian (energy) operator, formulation of Schrodinger equation, particle in box (1D, 2D and 3D box) (no derivations), sketching of wavefunction and probability densities for 1D box, correspondence principle, degeneracy(lifting of degeneracy), applications to conjugated systems, harmonic oscillator, wavefunction and probability densities (no derivation), zero point		--

					oscillator, wavefunction and probability densities (no derivation), zero point energy and quantum tunneling.		energy and quantum tunneling.		

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Signature of Teacher | **Signature of Head of Department** | **Signature of Faculty In-charge** | **Signature of the Principal**

Head
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Incharge
Science Faculty
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Arts, Science and Commerce College, Indapur, Dist. Pune
TEACHING AND EVALUATION PLAN

Name of the teacher: Prof . Mane U.L	**A. Year:** 2020-2021		**Semester:** III
Subject: Physical & Analytical Chemistry		**Paper:** I CH-301	**Class:** S.Y.B.Sc

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Nov2020	2,3 & 4	12	12	**1. Chemical Kinetics: [12 L]** Introduction to kinetics, the rates of chemical reactions – definition of rates, rate laws and rate constants, reaction order and molecularity, determination of rate law, factors affecting reaction rates, integrated rate laws – zeroth-order reactions, first-order reactions, second-order reactions (with equal and unequal initial	12	**1. Chemical Kinetics: [12 L]** Introduction to kinetics, the rates of chemical reactions – definition of rates, rate laws and rate constants, reaction order and molecularity, determination of rate law, factors affecting reaction rates, integrated rate laws – zeroth-order reactions, first-order reactions, second-order reactions (with equal and unequal initial concentration of reactants),	Nil	--

3	January 2021	1,2 & 3	13	13	**4. Volumetric Analysis [13 L]** Introduction to volumetric analysis, classification of reactions in volumetric analysis, standard solutions, equivalents, normalities, and oxidation numbers, preparation of standard solutions, primary and secondary standards. **1. Neutralization titrations** **2. ComplexometricTitrations** **3. Redox Titrations:** **4. Precipitation titrations:**	13	**4. Volumetric Analysis [13 L]** Introduction to volumetric analysis, classification of reactions in volumetric analysis, standard solutions, equivalents, normalities, and oxidation numbers, preparation of standard solutions, primary and secondary standards. **1. Neutralization titrations** **2. ComplexometricTitrations** **3. Redox Titrations:** **4. Precipitation titrations:**	01	One Extra Lec taken

Semester IV **Paper: I CH-401** **Year : 2020-2021**

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	**Month**	**Week**	**No. of working days**	**No. of periods available**	**Topics to be taught**	**No. of periods engaged**	**Topics taught**	**Deviation in periods**	**Remarks**
1	May 2021	1,2,& 3	09	09	**1 1. Phase equilibrium [9L]** Introduction; definitions of phase, components and degrees of freedom of a system; stability of phases, criteria of phase equilibrium. Gibbs phase rule and its thermodynamic derivation, phase diagrams of one- component systems- water, carbon dioxide and sulphur systems, problems.	09	**1. Phase equilibrium [9L]** Introduction; definitions of phase, components and degrees of freedom of a system; stability of phases, criteria of phase equilibrium. Gibbs phase rule and its thermodynamic derivation, phase diagrams of one-component systems- water, carbon dioxide and sulphur systems, problems.	Nil	--
2	June 2021	1,2,3 ,& 4	12	12	**2. Ideal and real solutions [9L]** Introduction, chemical potential of liquids - ideal solutions, ideal dilute solutions -Raoult's and Henry's	15	**2. Ideal and real solutions [9L]** Introduction, chemical potential of liquids - ideal solutions, ideal dilute solutions -Raoult's and Henry's Law, liquid mixtures, phase diagram of	03	03 Extra Lectures are taken.

					Law, liquid mixtures, phase diagram of binary systems : liquids -vapour pressure diagrams, temperature composition diagrams, liquid-liquid phase diagrams, solubility of partially miscible liquids-critical solution temperature, effect of impurity on partially miscible liquids, Problems. **3. Conductometry [6 L]** Introduction, Electrolytic Conductance, Resistance, conductance, Ohm's law, cell constant, specific and equivalent conductance, molar conductance, variation of equivalent and specific conductance with concentrations, Kohlrausch's law and its applications, conductivity cell, conductivity meter, Whetstone Bridge, determination of cell constant, conductometric titrations (strong acid-strong base, strong acid-weak base, weak acid strong base) and Numericals.		binary systems : liquids -vapour pressure diagrams, temperature composition diagrams, liquid-liquid phase diagrams, solubility of partially miscible liquids-critical solution temperature, effect of impurity on partially miscible liquids, Problems. **3. Conductometry [6 L]** Introduction, Electrolytic Conductance, Resistance, conductance, Ohm's law, cell constant, specific and equivalent conductance, molar conductance, variation of equivalent and specific conductance with concentrations, Kohlrausch's law and its applications, conductivity cell, conductivity meter, Whetstone Bridge, determination of cell constant, conductometric titrations (strong acid-strong base, strong acid-weak base, weak acid strong base) and Numericals.		
3	July 2021	1,2,3 ,& 4	12	12	**4. Colorimetry: [6 L]** Introduction, interaction of electromagnetic radiation with matter, essential terms: radiant power, transmittance, absorbance, molar, Lamberts Law, Beer's Law, Lambert-Beer's Law, molar absorptivity, deviations from Beer's Law, Colorimeter: *Principle, Construction and components, Working*. Applications–unknown	12	**4. Colorimetry: [6 L]** Introduction, interaction of electromagnetic radiation with matter, essential terms: radiant power, transmittance, absorbance, molar, Lamberts Law, Beer's Law, Lambert-Beer's Law, molar absorptivity, deviations from Beer's Law, Colorimeter: *Principle, Construction and components, Working*. Applications–unknown conc.		

					conc. By calibration curve method, Determination of unknown concentration of Fe(III) by thiocynate method, Numericals. **5. Column Chromatography [6 L]** Introduction, Principle of Column Chromatography, **Ion Exchange Chromatography:** Ion exchange resins, action of ion exchange resin (Ion exchange equilibria, Ion exchange capacity), Experimental technique, Application: i) Separation of Metal ions / non-metal ions on Ion Exchange Chromatography (*Zn(II) and Mg(II), Cl- and Br-),* ii) Purification of water. **Adsorption Chromatography – Liquid solid chromatography:** Introduction, the technique of conventional chromatography, column packing materials, Selection of solvent for adsorption chromatography, Adsorption column preparation and loading, Application – Purification of anthracene Size Exclusion Chromatography.		By calibration curve method, Determination of unknown concentration of Fe(III) by thiocynate method, Numericals. **5. Column Chromatography [6 L]** Introduction, Principle of Column Chromatography, **Ion Exchange Chromatography:** Ion exchange resins, action of ion exchange resin (Ion exchange equilibria, Ion exchange capacity), Experimental technique, Application: i) Separation of Metal ions / non-metal ions on Ion Exchange Chromatography (*Zn(II) and Mg(II), Cl- and Br-),* ii) Purification of water. **Adsorption Chromatography –Liquid solid chromatography:** Introduction, the technique of conventional chromatography, column packing materials, Selection of solvent for adsorption chromatography, Adsorption column preparation and loading, Application – Purification of anthracene Size Exclusion Chromatography.		

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TEACHING AND EVALUATION PLAN

Name of the teacher: Dr. M. P. Shinde	**Year:** 2020-2021
Semester: I	
Subject: Analytical Chemistry	**Paper:** IV CH-334 **Class:** T Y B Sc

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Nov2020	3 & 4	9	8	**Gravimetry** Introduction to gravimetric analysisPrecipitation methods	8	**Gravimetry (9 L)** Introduction to gravimetric analysis, Precipitation methods	Nil	--
2	Dec 2020	1& 2	12	8	Applications of gravimetry & problems & introduction to Inorganic Qualitative analysis	10	Applications of gravimetry & problems & introduction to Inorganic Qualitative analysis	Nil	--
3	Dec 2020	3 & 4	11	7	Solution preparation, separation of basic radicals & acidic radicals & removal of interfering radicals	8	Solution preparation, separation of basic radicals & acidic radicals & removal of interfering radicals	1	Extra lecture was conducted on sunday
4	January 2021	1 &2	11	8	Thermal methods of analysis & its Applications & Parameters of Instrumental analysis	8	Thermal methods of analysis & its Applications & Parameters of Instrumental analysis	Nil	--
5	January 2021	3 & 4	12	8	**UV-Visible spectroscopy** Introduction, Theory & problems	8	**UV-Visible spectroscopy** Introduction, Theory & problems	Nil	--

Semester II **Paper: IV CH-344** **Year : 2020-2021**

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	July 2021	2 & 4	11	8	Solvent Extraction: Principlee,theoey and problems and Interoduction to Chromatography and its classification	8	Solvent Extraction: Principlee,theoey and problems and Interoduction to Chromatography and its classification	Nil	--
2	August 2021	1 &2	11	8	Theory, technique and applications of Column chromatography, Paper chromatography & problems	9	Theory, technique and applications of Column chromatography, Paper chromatography & problems	1	Extra lecture was conducted
3	Sept 2021	1 & 2	12	8	Gas chromatography, GLC, GSC, HPLC, Principal, instrumentation & applications, SFC: Introduction	8	Gas chromatography, GLC, GSC, HPLC, Principal, instrumentation & applications, SFC: Introduction	Nil	--
4	Sept 2021	3 & 4	12	8	Electrophoresis: Introduction, Principle and theory	8	Electrophoresis: Introduction, Principle and theory		--
5	Oct 2021	1 & 2	12	8	Nephelometry and Turbidimetry Introduction, Principles instrumentation & problems	9	Nephelometry and Turbidimetry Introduction, Principles instrumentation & problems	1	Extra lecture was conducted

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Arts, Science and Commerce College, Indapur, Dist. Pune

TEACHING AND EVALUATION PLAN

Name of the teacher: Dr. Bhosale R.R	**Year:** 2020-2021		**Annual**
Subject: Physical Chemistry Practical (T5, T6,T7)	**Paper:** I CH-347	**Class:** T. Y. B. Sc.	

Part I: Teaching Plan						Part II: Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	July2020	3 & 4	12	8	1. Chemical Kinetics: (2)	8	1. Hydrolysis of an ester. 2.To compare the relative strength of HCl and H2SO4	Nil	--
2	July 2020	5	05	4	1. Chemical Kinetics: (1)	4	3.To study the kinetics of iodination of acetone	Nil	-----
3	Aug. 2020	2 & 3	12	8	1. Chemical Kinetics: (2)	8	4. The energy of activation between KI and K2S2O8. 5.The order of reaction between K2S2O8 and KI .	Nil	----
4	Aug 2020	4 &5	12	8	2. Viscosity: 3.Adsorption	8	The molecular weight of a high polymer To investigate the adsorption of oxalic acid /acetic acid by activated charcoal	Nil	----
5	Sept. 2021	1 & 2	11	8	4. Phenol-water system 6. Refractometry (1)	8	Phenol -water System To determine the molecular refractivity of the given liquids A, B, C and D.	Nil	---
6	Sept.2021		12	4	6. Refractometry (1)	4	Determine the percentage composition their mixture C.	Nil	---

Annual **Paper: CH- 347 Physical Chemistry Practical** **Year : 2020-2021**

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
7	Sept 2020	3& 4	12	8	1. Colorimetry (any two)	6	i) λmax and concentration of unknown solution of KMnO4 iii) λmax and concentration of unknown solution of CuSO4.	Nil	--
8	Dec 2020	2 &3	12	8	2. Potentiometry (any three) 3.pH metry (any two)	8	iDetermine the pka value of these and unknown solutions. ii)To determine the concentrations of strong acid and weak acid iii) formal redox potential of Fe2+/ Fe3+	Nil	-----
8	Dec.2020	4	6	4	5.Conductrometry (1)	4	)Degree of hydrolysis of aniline hydrochloride	Nil	---
9	Jan.2021	2&3	12	8	Conductometry(2)	8	ii)pka value of given weak acid with strong base i) Ka ii) the amount of lead present in given solution of lead nitrate	Nil	---

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TEACHING AND EVALUATION PLAN

Name of the teacher: Dr. Bhosale R.R	**Year:** 2020-2021	**Semester:** I
Subject: Physical Chemistry	**Paper:** I CH- 101	**Class:** F. Y. B. Sc.

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	July2020	3 & 4	9	6	**Chemical Energetics:** Important principles of thermochemistry. Concept of standard state and standard enthalpies,	6	**Chemical Energetics:** Important principles of thermochemistry. Concept of standard state and standard enthalpies,	Nil	--
2	Aug 2020	1& 2	12	6	Calculation of bond energy, bond dissociation energy, Kirchhoff's equation. Statement of Third Law of thermodynamics ,problems	6	Calculation of bond energy, bond dissociation energy, Kirchhoff's equation. Statement of Third Law of thermodynamics ,problems	1	Extra lecture was conducted on sunday
3	Aug. 2020	3 & 4	11	6	**Chemical Equilibrium:** Free Energy and equilibrium - Concept, Definition and significance, response of equilibria to conditions- response to pressure , response to temperature,	6	**Chemical Equilibrium:** Free Energy and equilibrium - Concept, Definition and significance, response of equilibria to conditions- response to pressure , response to temperature,	Nil	----
4	Sept. 2020	1 &2	11	6	The perfect gas equilibrium, Van't Haff equation, Value of K at different temperature, Problems	6	The perfect gas equilibrium, t. Van't Haff equation, Value of K at different temperature, Problems	1	Extra lecture was conducted
5	Sept. 2020	3 & 4	12	6	**Ionic Equilibria:** Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant,	6	**Ionic Equilibria:** Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant,	Nil	---

Semester I **Paper: I CH-101** **Year : 2020-2021**

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
6	Oct. 2020	1 & 2	11	6	Ionization of weak acids and bases, pH scale, common ion effect. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions.	6	Ionization of weak acids and bases, pH scale, common ion effect. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions.	Nil	--
7	Oct. 2020	3 &4	11	6	Solubility and solubility product of sparingly soluble salts– applications of solubility product principle.	6	Solubility and solubility product of sparingly soluble salts– applications of solubility product principle.	4	Extra lecture was conducted

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TEACHING AND EVALUATION PLAN

Name of the teacher: Dr. Bhosale R.R	**Year:** 2020-2021	**Semester:** II
Subject: Analytical Chemistry	**Paper:** I CH- 202	**Class:** F. Y. B. Sc.

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Non.2020	3 & 4	9	6	**Introduction to Analytical Chemistry: Calculations used in Analytical Chemistry:** mole, millimole and Calculations, significant figures	6	**Introduction to Analytical Chemistry: Calculations used in Analytical Chemistry:** mole, millimole and Calculations, significant figures	Nil	--
2	Dec. 2020	1& 2	12	6	Solution and their concentrations- Chemical Stoichiometry – Empirical and Molecular Formulas, Problems.	6	Solution and their concentrations- Chemical Stoichiometry – Empirical and Molecular Formulas, Stoichiometric Calculations, Problems.	1	Extra lecture was conducted
3	Dec. 2020	3 & 4	11	6	**Qualitative Analysis of Organic Compounds:** binary mixtures, Lassiagen's test. Purification- recrystallization, distillation, sublimation	6	**Qualitative Analysis of Organic Compounds:** binary mixtures, Lassiagen's test. Purification recrystallization, distillation, sublimation	Nil	----
4	Jan. 2021	1 &2	11	6	**Chromatographic Techniques –** Paper and Thin Layer, IUPAC definition of chromatography.	6	**Chromatographic Techniques –**Paper and Thin Layer ,IUPAC definition of chromatography	1	Extra lecture was conducted
5	Jan. 2021	3 & 4	12	6	Paper, Thin Layer, Ion exchange , Gas permeation, affinity, Gas, Supercritical fluid, HPLC,	6	Paper, Thin Layer, Ion exchange , Gas permeation, affinity, Gas, Supercritical fluid, HPLC,	Nil	---

Semester II **Paper: I CH-202** **Year : 2020-2021**

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
6	Feb. 2021	1 & 2	11	6	Thin Layer Chromatography: Theory and principles, Paper Chromatography- technique, sample preparation, types of paper, solvents	6	Thin Layer Chromatography: Theory and principles, Paper Chromatography- technique, sample preparation, types of paper, solvents	Nil	--
7	Feb. 2021	3 &4	11	6	**pH meter:** pH meter, Glass pH electrode, combination of pH electrode-Complete Cell, Standard Buffer ,pH measurement, How does it works? Applications.	6	**pH meter:** pH meter, Glass pH electrode, combination of pH electrode-Complete Cell, Standard Buffer, pH measurement, How does it works? Applications.	---	----

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TEACHING AND EVALUATION PLAN

Name of the teacher: Dr. Bhosale R.R **Year:** 2020-2021 **Semester:** III

Subject: Agriculture Chemistry **Paper:** I CH-336E **Class:** T. Y. B. Sc.

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	July2020	3 & 4	9	6	**Soil Chemistry:** Role, Scope and importance of agricultural chemistry Definition of soil, Soil components- mineral component, Physical properties of soil	6	**Soil Chemistry:** Role, Scope and importance of agricultural chemistry Definition of soil, Soil components- mineral component, Physical properties of soil	Nil	--
2	Aug 2020	1& 2	12	6	Chemical properties of soil, Factor controlling soil rea **Problematic Soil and Soil testing:** Acid soil, Alkali Soil	6	Chemical properties of soil, Factor controlling soil rea **Problematic Soil and Soil testing:** Acid soil, Alkali Soil	Nil	--
3	Aug. 2020	3 & 4	11	6	Classification of alkali soil, Introduction to soil testing, Objectives of soil testing	6	Classification of alkali soil, Introduction to soil testing, Objectives of soil testing	Nil	----
4	Sept. 2020	1 &2	11	6	**Quality of Irrigation Water:** Sources of Water, Impurities in Water, Water quality, Analysis of irrigation Water Dissolved constituents and their functions.	6	**Quality of Irrigation Water:** Sources of Water, Impurities in Water, Water quality, Analysis of irrigation Water Dissolved constituents and their functions.	Nil	-----
5	Sept. 2020	3 & 4	12	6	Water quality standard- TSS, SAR, Exchange sodium ESP),RSC, salinity classes for irrigation water.	6	Water quality standard- TSS, SAR, Exchange sodium ESP),RSC, salinity classes for irrigation water.	Nil	---

Semester I **Paper: I CH-511A** **Year : 2020-2021**

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
6	Oct. 2020	1 & 2	11	6	**Plant Nutrients:** Classification of essential nutrients, Micronutrients and their functions of (Zn, Fe, Mn, Cu, B, Mo, Cl)	6	**Plant Nutrients:** Classification of essential nutrients,Micronutrients and their functions of (Zn, Fe, Mn, Cu, B, Mo, Cl)	Nil	--
7	Oct. 2020	3 &4	11	6	**Fertilizers and Manures:** Classification & application **Manures:** FYM, **Biofertlizers:**	6	**Fertilizers and Manures:** Classification & application **Manures:** FYM, **Biofertlizers:**	Nil	----
8	Nov.2020	1&2		3	Protection of Plants: Pesticide, Insecticide, Fungicides, Herbicides-	3	Protection of Plants: Pesticide, Insecticide, Fungicides, Herbicides-	Nil	---

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2 One copy of the plan should be submitted at the beginning of the term after filling up columns 1 to 6.
3 The second copy must be retained by the teacher and submitted at the end of the term. Part second of the plan i. e. coumns 7 to 10 must be filled up progressively at the end of every week.

Signature of Teacher

Signature of Head of Department
Head
Department Of Chemistry
Arts,Science & Commerce
College,Indapue,Dist.Pune

Signature of Faculty In-charge
Incharge
Science Faculty
Arts,Science & Commerce
College,Indapur, Dist.Pune

Signature of the Principal
PRINCIPAL
ARTS, SCIENCE AND
COMMERCE COLLEGE
INDAPUR-413106 DIST-PUNE

Arts, Science and Commerce College, Indapur, Dist. Pune

TEACHING AND EVALUATION PLAN

Name of the teacher:	**Dr. Bhosale R.R**	**Year:** 2020-2021	**Semester: IV**
Subject:	**Dairy Chemistry**	**Paper: I CH-346E Dairy Chemistry**	**Class: T. Y. B. Sc.**

Part I : Teaching Plan						**Part II : Evaluation of Plan**			
1	2	3	4	5	6	7	8	9	10
Sr. No.	**Month**	**Week**	**No. of working days**	**No. of periods available**	**Topics to be taught**	**No. of periods engaged**	**Topics taught**	**Deviation in periods**	**Remarks**
1	Nov.2020	3 & 4	9	6	**Market Milk:** Definition, constituents of milk , Chemical composition, factor affecting composition, physicochemical properties, food and nutritive	6	**Market Milk:** Definition, constituents of milk , Chemical composition, factor affecting composition, physicochemical properties, food and nutritive	Nil	--
2	Dec. 2020	1& 2	12	6	Microbiology of milk, Cream separation- Basic principles, gravity creaming water dilution and centrifugal creaming method,	6	Microbiology of milk, Cream separation- Basic principles, gravity creaming water dilution and centrifugal creaming method,	Nil	---
3	Dec. 2020	3 & 4	11	6	Pasteurization of milk, uses of milk. **Special Milks:** Sterilized milk- Definition	6	Pasteurization of milk, uses of milk. **Special Milks:** Sterilized milk- Definition	Nil	----
4	Jan. 2021	1 &2	11	6	Homogenized milk, Soft curd milk- Flavored milk, Vitaminised / irradiated milk, Fermented milk, Standardized milk,	6	Homogenized milk, Soft curd milk- Flavored milk, Vitaminised / irradiated milk, Fermented milk, Standardized milk,	Nil	---
5	Jan. 2021	3 & 4	12	6	Milk proteins, Carbohydrates and Vitamins	6	Milk proteins, Carbohydrates and Vitamins	Nil	---

Semester VI **Paper: I CH-346E** **Year : 2020-2021**

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
6	Feb. 2021	1 & 2	11	6	**Preservatives & Adulterants in Milk** Adulterants Introduction, Modes of Adulteration and their detection.	6	**Preservatives & Adulterants in Milk** Adulterants Introduction, Modes of Adulteration and their detection.	Nil	--
7	Feb. 2021	3 &4	11	6	**Milk Products:** Cream, Butter, Cheese and Ice-Cream.	6	**Milk Products:** Cream, Butter, Cheese and Ice-Cream.	Nil	----

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