

Rayat Shikshan Sanstha's  
**Karmaveer Bhaurao Patil College Vashi, Navi Mumbai**  
(Autonomous)  
Syllabus for Approval

<b>Sr. No.</b>	<b>Heading</b>	<b>Particulars</b>
<b>1</b>	<b>Title of Course</b>	<b>F.Y.B.Sc. Chemistry</b>
<b>2</b>	<b>Eligibility for Admission</b>	<b>Level 4.0 completed</b>
<b>3</b>	<b>Passing marks</b>	<b>40%</b>
<b>4</b>	<b>Ordinances/Regulations (if any)</b>	
<b>5</b>	<b>No. of Semesters</b>	<b>Two</b>
<b>6</b>	<b>Level</b>	<b>4.5 UG</b>
<b>7</b>	<b>Pattern</b>	<b>Semester</b>
<b>8</b>	<b>Status</b>	<b>New</b>
<b>9</b>	<b>To be implemented from the Academic year</b>	<b>2023-2024</b>

AC- / /2023

Item No-



**Rayat Shikshan Sanstha's  
KARMAVEER BHARAO PATIL COLLEGE, VASHI, NAVI MUMBAI  
(AUTONOMOUS)**

Sector-15- A, Vashi, Navi Mumbai - 400 703

**Syllabus for F.Y.B.Sc. Chemistry**

**Program: Chemistry**

**Course: F.Y.B.Sc. Chemistry (Major/Minor)**

**(Choice Based Credit System as per National Education Policy 2020 with effect from the  
academic year 2023-2024)**

**Semester-I**

Sr. No.	Course code	Course Name	No. of Credits	Unit No.	Name of the Unit
<b>Paper-I (Major)</b>	<b>UGCH101</b>	Fundamentals of Chemistry	(3+1)	Unit-I	PHYSICAL CHEMISTRY
				Unit-II	INORGANIC CHEMISTRY
				Unit-III	ORGANIC CHEMISTRY

**NEP 2020 FYBSc Chemistry Major Syllabus  
FUNDAMENTALS OF CHEMISTRY  
SEM I**

	<b>UNIT I - PHYSICAL CHEMISTRY</b>	<b>15 L</b>
<b>I</b>	<p><b>1.1 Chemical Mathematics</b> 1.1 Chemical Mathematics: basic formulae of trigonometry, Basic derivatives, integration, Chemical Calculation: Normality, Molality, Molarity, Formality, mole fraction, weight ratio, volume ratio, weight to volume ratio, ppm, ppb, milimoles, miliequivalents (numericals)</p> <p><b>1.2 Basic Thermodynamics</b> :Intensive and extensive properties, state functions and path functions, zeroth law of thermodynamics concept of heat (q), work (w), internal energy (U), statement of first law, enthalpy, relation between heat capacities, sign conventions, calculations of heat (q), work (w), internal energy (U), an enthalpy (H) (Numericals expected)</p>	
	<p><b>UNIT II - INORGANIC CHEMISTRY</b></p> <p><b>2.1 Atomic structure</b> Heisenberg uncertainty principle, De-Broglie hypothesis, Atomic orbitals, Quantum numbers, Aufbau Principle, Pauli's Exclusion Principle, Hund's rule, screening effect, Slater rule.</p> <p><b>2.2 Periodic table and periodicity</b> Introduction to long form of periodic table, classification of element, periodicity in properties a) atomic/ionic radii b) electronegativity c) ionization energy d) metallic/non metallic nature.</p> <p><b>2.3 Acid-Base theory</b></p>	<b>15 L</b>

	Arrhenius theory Lowry-Bronsted theory, Lewis theory, Lux-Flood concept, Usanovich Concept, HSAB Principle, Pearson's principle.	
	<b>UNIT III - ORGANIC CHEMISTRY</b>	<b>15 L</b>
<b>III</b>	<p><b>3.1 Nomenclature of organic compounds:</b> Recapitulation of basic rules of IUPAC nomenclature. Nomenclature of mono and bi-functional aliphatic and aromatic compounds on the basis of priority order of the following classes of compounds: nitro compounds, nitriles and amines; including their cyclic analogues.</p> <p><b>3.2 Fundamentals of organic reaction mechanism:</b>  <b>3.2.1 Electronic Effects:</b> Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Organic acids and bases; their relative strengths.  <b>3.2.2 Reactive intermediates:</b> Types, shapes and relative stability of Carbocations, Carbanion, free radicals, Carbenes and nitrenes.  <b>3.2.3 Introduction to types of organic reactions:</b> Addition, Elimination, Substitution, and Rearrangement reactions (With one example of each)</p>	

<b>CHEMISTRY PRACTICALS SEMESTER I</b>	
<b>FUNDAMENTALS OF CHEMISTRY</b>	
<b>Physical Chemistry</b>	<ol style="list-style-type: none"> <li>To prepare 0.1 N succinic acid and standardize the NaOH of two different concentrations.</li> <li>To determine the rate constant for the hydrolysis of ester using HCl as catalyst.</li> <li>Safety symbol on labels of pack of chemicals and its meaning</li> <li>What is MSDS sheets? Find out MSDS sheets of at least hazardous chemicals (<math>K_2Cr_2O_7</math>, Benzene, cadmium nitrate, sodium metal, etc.)</li> </ol>
<b>Inorganic Chemistry.</b>	<ol style="list-style-type: none"> <li>Commercial analysis of (<b>any two</b>) a) Mineral acid b) Organic acid c) Salt of weak acid and strong base, by using volumetric method.</li> <li>Titration using double indicator: analysis of solution of <math>Na_2CO_3</math> and <math>NaHCO_3</math>.</li> <li>Gravimetric analysis - To determine the percent purity of sample of <math>BaSO_4</math> containing <math>NH_4Cl</math></li> </ol>

<b>Organic Chemistry</b>	<p>1. Purification of any two organic compounds by recrystallization selecting suitable solvent. (Provide 1g.). Learners are expected to report: <b>a) Solvent for recrystallization. b) Mass and the melting points of purified compound. (Learners should calibrate thermometer before determining melting point.)</b></p>
<b>Analytical Chemistry</b>	<p>1. Chromatography (Any one) a) Separation of a mixture of two sugars by ascending paper chromatography b) Separation of a mixture of o-and p-nitro phenols by thin layer chromatography (TLC) (<b>Demonstration</b>)</p> <p>2. To determine the concentration of metal by colorimetric method</p>

### References:

<b>Unit-I (Physical Chemistry and Analytical Chemistry )</b>	
<b>1</b>	Khosla B.D., Garg V.C. and Gulati A., Senior Practical Physical Chemistry, R. Chand and Co., New Delhi (2011).
<b>2</b>	Garland C. W., Nibler J.W. and Shoemaker D.P., Experiments in Physical Chemistry, 8th Ed., McGraw-Hill, New York (2003).
<b>3</b>	Halpern A.M. and McBane G.C., Experimental Physical Chemistry, 3rd Ed., W.H. Freeman and Co., New York (2003).
<b>4</b>	Athawale V.D. and Mathur P., Experimental Physical Chemistry, New Age International, New Delhi (2001).
<b>5</b>	Instrumental methods of chemical analysis by H. Kaur, Pragati Prakashan.
<b>6</b>	Principles of instrumental Analysis, 5th Edition, by D. A. Scoog, F. J. Holler, T. A. Nieman, Harcourt Asia Publisher.
<b>7</b>	Introduction to Instrumental Analysis by R. D. Braun. McGraw Hill Publisher.
<b>8</b>	Quantitative chemical analysis 6th edition by Vogel, Pearson Education Limited, 2007.
<b>Unit-II (Inorganic Chemistry )</b>	
<b>1</b>	Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6 th Ed., Pearson, 2009.
<b>2</b>	Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., Textbook of Practical Inorganic Chemistry
<b>Unit-III (Organic Chemistry )</b>	
<b>1</b>	Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
<b>2</b>	Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
<b>3</b>	Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., Textbook of Practical Organic Chem
<b>4</b>	Organic chemistry by Solomon and Fryhles.
<b>5</b>	Organic chemistry by Morrison and Boyd

**SEM- II**

Sr. No.	Course code	Course Name	No. of Credits	Unit No.	Name of the Unit
<b>Paper-I (Major)</b>	<b>UGCH153</b>	Fundamentals of Chemistry	(3+1)	Unit-I	PHYSICAL CHEMISTRY
				Unit-II	INORGANIC CHEMISTRY
				Unit-III	ORGANIC CHEMISTRY

	<b>UNIT I - PHYSICAL CHEMISTRY</b>	<b>15 L</b>
<b>I</b>	<p><b>1.1 Gaseous state:</b> Ideal gas laws, kinetic theory of gases, ideal gases, real gases, compressibility factor, Boyle's temperature (Numerical expected) Joule-Thomson effect: qualitative discussion and experimentation, inversion temperature.</p> <p><b>1.2 Chemical equilibria:</b> Reversible and irreversible reactions, law of mass action, dynamic equilibria, equilibrium constant, (<math>K_c</math> and <math>K_p</math>), relationship between <math>K_c</math> and <math>K_p</math>, Le Chatelier's principle, factors affecting chemical equilibrium (Numerical expected)</p> <p><b>1.3 Chemical Kinetics:</b> Recapitulation of chemical kinetics, 1<sup>st</sup> order reaction, 2<sup>nd</sup> order reaction, Rate law, (Numerical expected)</p>	
	<b>UNIT II - INORGANIC CHEMISTRY</b>	<b>15 L</b>
	<p><b>2.1 Comparative chemistry of main group elements:</b> Metallic and non-metallic nature, oxidation states, electronegativity, anomalous behavior of second period elements, allotropy, catenation, diagonal relationship.</p> <p><b>2.2 Chemical bond and reactivity:</b> Types of chemical bond, comparison between ionic and covalent bonds, polarizability (Fajan's Rule), shapes of molecules, Lewis dot structure, Sidgwick Powell Theory, basic VSEPR theory for <math>AB_n</math> type molecules with and without lone pair of electrons, isoelectronic principles, applications and limitations of VSEPR theory.</p>	
	<p><b>UNIT III</b></p> <p>3.1 Aromatic Hydrocarbons Aromaticity: Hückel's rule, anti-aromaticity, aromatic character of arenes, cyclic Carbonations/carbanion and heterocyclic compounds with suitable examples.</p>	<b>15L</b>

<p>Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft alkylation and acylation with their mechanism.</p> <p>3.2 Chemistry of Alkenes and alkynes</p> <p>3.2.1 Formation of alkenes and alkynes by elimination reactions: Mechanism of E1, E2 reactions. Saytzeff and Hofmann eliminations.</p> <p>3.2.2 Reactions of alkenes: Electrophilic additions their mechanisms (Markownikoff/ Anti Markownikoff addition)</p> <p>3.2.3 Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions. Hydration to form carbonyl compounds, Alkylation of terminal alkynes.</p>	
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(AUTONOMOUS)**

Sector-15- A, Vashi, Navi Mumbai - 400 703

**Syllabus for F.Y.B.Sc. Chemistry**

**Program: Chemistry**

**Course: F.Y.B.Sc. Chemistry (OE)**

(Choice Based Credit System as per National Education Policy 2020 with effect from the academic year 2023-24)

**Choice Based Credit Grading and Semester System (CBCGS)**  
**F.Y.B. Sc. Chemistry Syllabus**  
**Open Elective (OE)**  
**To be implemented from the Academic year 2023-2024**

**SEM – I**

**Name of Paper: Chemistry of Everyday Life**

<b>Course Code</b>	<b>Unit</b>	<b>Topics</b>	<b>Credits</b>	<b>L / Week</b>
CHE102	I	Introduction to the atoms in periodic table. The familiar Chemicals at home.	4	1
	II	Carbohydrates. Milk, egg and salts.		1
	III	Chemical composition of House construction material		1
	IV	Practical in Chemistry of Everyday Life		1

	<b>UNIT I – The familiar chemicals at home</b>	<b>15 L</b>
	Water, hydrogen peroxide, air and other gases at home, refrigeration gases,	



<b>I</b>	liquefied petroleum gas (LPG), some important compounds :- Baking soda, washing soda, caustic soda, common salt, quick lime, limestone. Food additives, adulterants and contaminants- Food preservatives like benzoates, propionates, sorbates, disulphites. Flavors: Vanillin, alkyl esters (fruit flavors) and monosodium glutamate (Ajinomoto)	
<b>II</b>	<b>UNIT II –Carbohydrates, Milk, egg and salts</b> Sugars, lactose, maltose, starch, cellulose, jaggery, brown sugar, milk, milk content, butter, paneer, milk preservation, egg, salt for cooking, salt variants, production of sea salt, importance of salt, baking soda, baking powder and yeast.	<b>15 L</b>
<b>III</b>	<b>Unit-III: Chemical composition of House construction material</b> Composition and uses of: 1. concrete, 2. bricks, 3. wood, 4. plastic, 5. glass, 6. ceramics, 7. stones.	<b>15L</b>
<b>IV</b>	<b>Unit-IV Practical in Chemistry of Everyday Life</b> 1. Separation of Casein from milk. 2. Measurement of pH of Acidic & Basic Solutions (Any Four) 3. Acid-Base neutralization reaction. 4. Adulteration test for: oil/milk/jaggary/vinegar/butter/salt etc. (any four)	<b>15 L</b>

**References:**

1. Analysis of Foods – H.E. Cox
2. Chemical Analysis of Foods – H.E.Cox and pearson.
3. Foods: Facts and Principles. N. Shakuntala Many and S. Swamy, 4th Ed. New Age International (1998)
4. Polymer Science and Technology, J. R. Fried (Prentice Hall)
5. Dairy science and food technology “Advances and Application “by Aziz Homayouni.
6. Food Adulteration and Hygiene: By Anupama Rani
7. Detect Adulteration with Rapid Test manual (DART) by FSSAI

**SEM – II****Name of Paper: Environmental Chemistry**

<b>Course Code</b>	<b>Unit</b>	<b>Topics</b>	<b>Credits</b>	<b>L / Week</b>
CHE152	I	General Introduction to Environmental Chemistry	4	1
	II	Atmospheric Chemistry		1
	III	Toxic chemicals in the environment.		1
	IV	Practical related to environmental chemistry		1

	<b>UNIT I – General Introduction to Environmental Chemistry</b>	<b>15 L</b>
<b>I</b>	<b>1.1 General Introduction to environmental chemistry: Definition, Scope and importance.</b> <b>1.2 Environmental pollution: Definition, causes, effects, and control measures of: Water Pollution, Soil Pollution.</b>	
	<b>UNIT II – Atmospheric Chemistry</b>	<b>15 L</b>

<b>II</b>	<p><b>2.1. Studies of various gaseous pollutants, such as oxides of nitrogen, carbon and sulfur with respect to i) Sources of emission; ii) fate; iii) health hazards; and control measures; Catalytic converters.</b></p> <p><b>2.2 Acid Rain, Causes of acid rain, Composition and formation of acid rain, Impact of acid rain.</b></p> <p><b>2.3. Global Warming, Green House Effect, Green House Gases, Impact of Greenhouse gases on global warming, Ways of reducing greenhouse gases, Alternatives to fossil fuels.</b></p> <p><b>2.4. Introduction- Ozone Layer, Formation of Ozone, Function of ozone in the atmosphere, Ozone layer depletion and its consequences.</b></p>	
	<b>Unit-III – Toxic chemicals in the environment.</b>	<b>15 L</b>
<b>III</b>	<p><b>Detergents- pollution aspects, eutrophication. Pesticides and insecticides-pollution aspects. Heavy metal pollution. Solid pollutants- treatment and disposal. Treatment of industrial liquid wastes. Sewage and industrial effluent treatment. Role of an individual in prevention of pollution and pollution case studies with reference to water and soil pollution.</b></p>	

### **References:**

1. Environmental Chemistry by Baird and Colin
2. Chemistry of Environment by Bailey and Strong
3. Environmental Chemistry by Anil Kumar De
4. Environmental Chemistry by B K Sharma
5. Environmental Chemistry by S C Bhatia
6. Environmental Chemistry by Banerji
7. Environmental Chemistry by Colin Baird and Michael Cann
8. Industrial Ecology: Environmental Chemistry and Hazardous Waste by Stanley E Manahan
9. Chemistry in the Marine Environment (Issues in Environmental Science and Technology) by Wim Salomons and Raymond J Anderson
10. Chemistry and the Environment by Sven E Harnung and Matthew S Johnson
11. The Caspian Sea Environment (The Handbook of Environmental Chemistry) by imusti
12. Chemistry of the Environment by Thomas G Spiro Kathleen L Purvis-Roberts William M Stigliani
13. Naturally-Produced Organohalogenes (Environment and Chemistry) by Anders Grimvall and Ed WB de Leer

14. Chemistry and Environment: Legislation, Methodologies and Applications (Eurocourses:Environmental Management) by Sergio Facchetti and Demetrio Pitea
15. Environment, Energy and Climate Change I: Environmental Chemistry of Pollutants and Wastes: (The Handbook of Environmental Chemistry) by Elena Jiménez and Beatriz Cabañas
16. The Natural Environment and the Biogeochemical Cycles (The Handbook of Environmental Chemistry) by H J Bolle
17. Hospital Wastewaters: Characteristics, Management, Treatment and Environmental Risks (The Handbook of Environmental Chemistry) by Paola Verlicchi

## **Sem-II**

### **Environmental Chemistry Practicals**

1. Estimation of pH, T.D.S., from given water sample.
2. Estimation of alkalinity from given water sample.
3. Estimation of Hardness, Ca and Mg from given water sample.
4. Estimation of Chlorides by Silver nitrate method.
5. Estimation of Sulphate from given water sample by spectrophotometrically/ colorimetrically.
6. Estimation of Phosphate from given water sample by Spectrophotometrically

#### References:

1. 'Analysis of water and waste water'-by Manivascumm
2. 'Handbook of methods in Environmental studies' Vol. 1 water and wastewater analysis by S.K. Maiti.
3. 'Physicochemical analysis of water and soil' by R. K. Trivedi
4. 'Instrumental Methods of Analysis' by Willard

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KARMAVEER BHARAO PATIL COLLEGE, VASHI. NAVI MUMBAI  
(AUTONOMOUS)**

Sector-15- A, Vashi, Navi Mumbai - 400 703

**Syllabus for F.Y.B.Sc. Chemistry**

**Program: Chemistry**

**Course: F.Y.B.Sc. Chemistry (VSC)**

**(Choice Based Credit System as per National Education Policy 2020 with effect from the academic year 2023-24)**

**Choice Based Credit System (CBCS) F.Y.B. Sc. Chemistry Syllabus  
To be implemented from the Academic year 2023-2024  
Vocational Skill Course (VSC)  
Preparation of Household Chemicals  
SEMESTER I**

<b>Sr. No.</b>	<b>Course code</b>	<b>Course Name</b>	<b>No. of Credits</b>	<b>Unit No.</b>	<b>Name of the Unit</b>
VSC	CHE103	Preparation of Household Chemicals	(1+1)	Unit-I	<ul style="list-style-type: none"><li>• Preparation of soap</li><li>• Preparation of detergent</li><li>• Preparation of handwash</li><li>• Preparation of floor cleaner</li></ul>

<b>Course Code</b>	<b>Unit</b>	<b>Topics</b>	<b>Credits</b>	<b>No. of Lectures</b>
CHE103	I		1	4

	<p><b>PREPARATION OF SOAPS</b></p> <p>1.1 Introduction  1.2 History  1.3 Ingredients for soap making  1.4 Methods of soap making  1.5 Types of soaps  1.6 Preparation of soap in the laboratory</p>		
	<p><b>PREPARATION OF DETERGENTS</b></p> <p>2.1 Introduction  2.2 Ingredients  2.3 Manufacturing  2.4 Applications</p>		4
	<p><b>PREPARATION OF HAND WASH</b></p> <p>3.1 Introduction  3.2 Manufacturing Process  3.3 Application</p>		3
	<p><b>PREPARATION OF FLOOR CLEANING AGENT</b></p> <p>4.1 Introduction  4.2 Content (ingredients)  4.3 Preparation</p>		

### **Practical**

1. Preparation of soaps.
2. Preparation of detergent.
3. Preparation of antiseptic/scented/transparent hand wash.
4. Preparation of floor cleaner.

### **References:-**

1. Modern Technology of Soaps, Detergents & Toiletries: By P. K. Chattopadhyay
2. Handbook on Soaps, Detergents & Acid Slurry: By NIIR board
3. Complete Technology Book on Soaps, Detergents, Cleaners and Fragrances with Formulations: Covers fragrances technology, perfume oil, and more: By EIRI
4. Complete Technology Book on Detergents with Formulations: By EIRI

**SEM – II**

Sr. No.	Course code	Course Name	No. of Credits	Unit No.	Name of the Unit
VSC	CHE153	Chemistry of Cosmetics	(1+1)	Unit-I	Study and preparation of <ul style="list-style-type: none"> <li>• Hair dye</li> <li>• Shampoo</li> <li>• Lipstick</li> <li>• Perfume</li> </ul>

Course Code	Unit	Topics	Credits	No. of Lectures
CHE153	I	A general study including preparation and uses of the following: Hair dye, hair spray, shampoo, suntan lotions, face powder, lipsticks, talcum powder, nail enamel, creams (cold, vanishing and shaving creams). Essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone.	1	15
Practical		<b>Project-cum-practical: Hands on training on preparation of perfume and shampoo ,</b>	1	15



		<b>Students collect detailed information about cosmetic</b>		
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**Rayat Shikshan Sanstha's  
KARMAVEER BHURAO PATIL COLLEGE, VASHI. NAVI MUMBAI  
(AUTONOMOUS)**

Sector-15- A, Vashi, Navi Mumbai - 400 703

**Syllabus for F.Y.B.Sc. Chemistry**

**Program: Chemistry**

**Course: F.Y.B.Sc. Chemistry (SEC)**

**(Choice Based Credit System as per National Education Policy 2020 with effect from the academic year 2023-24)**

**Choice Based Credit System (CBCS) F.Y.B. Sc. Chemistry Syllabus  
To be implemented from the Academic year 2023-2024  
Skill Enhancement Course (SEC)  
Analysis of Soil and Water  
SEMESTER I**

<b>Sr. No.</b>	<b>Course code</b>	<b>Course Name</b>	<b>No. of Credits</b>	<b>Unit No.</b>	<b>content of the Unit</b>
<b>SEC</b>	<b>CHE104</b>	Analysis of soil and water	(1+1)	Unit-I	<ul style="list-style-type: none"><li>• Analysis of water</li><li>• Analysis of soil</li></ul>

<b>UNIT I</b>	<b>15 L</b>
1.1 Introduction to Water analysis, Properties of water- color, odor, turbidity, total salt content, total suspended water. 1.2 Water pollution- Definition of water pollution, types of water pollutants, sources of water pollutants, trace elements in water, water quality parameters, and standards , Purification of water- Treatment of domestic and industrial water. Water Quality Parameters and Standards- Quality of drinking water, Quality of irrigation water, COD, BOD, 1.3 Introduction to Soil analysis, Types of soil, Soil pollutants, the role of soil testing for the environment, and Uses of soil analysis. 1.4 soil fertility and productivity , Properties of soil – Colour, temperature, pH, electrical conductance (EC), water holding capacity, organic carbon, soil salinity, soil density.	

	1.5 e. Soil erosion, Soil health , Soil moisture, Problematic soils- Types of problematic soils, Classification, management of problematic soil.	
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## **Practical:**

### **Part I – Soil Analysis**

- 1) To determine pH of the given soil sample.
- 2) To determine the TDS of a given soil sample.
- 3) To determine the salinity of a given soil sample.
- 4) To determine the micronutrient content of the soil sample.

### **Part II – Water Analysis**

- 1) To determine the hardness of water.
- 2) To determine the PH of the given water sample.
- 3) To determine the alkalinity of water.
- 4) To determine the TDS of a given sample of water.

**SEM – II**

<b>Sr. No.</b>	<b>Course code</b>	<b>Course Name</b>	<b>No. of Credits</b>	<b>Unit No.</b>	<b>content of the Unit</b>
<b>SEC</b>	<b>CHE154</b>	<b>Dairy Chemistry</b>	(1+1)	Unit-I	<ul style="list-style-type: none"> <li>• Introduction to dairy industry</li> <li>• Dairy products</li> </ul>

	<b>UNIT I</b>	<b>15 L</b>
	<p><b>1. Introduction to Dairy Industry:</b> Introduction, Definition, Chemical composition of milk, factor affecting composition of milk, characteristics of milk of different mammals, physicochemical properties of milk, acidity, pH, density, specific gravity, color and flavor of milk, food and nutritive value of milk.</p> <p><b>2. Special milk:</b> 1. Sterilized milk, Homogenized milk, soft curd milk, Flavored milk, Vitaminized / irradiated milk, Fermented milk, Standardized milk.</p> <p><b>3. Milk products:</b></p>	<p><b>5L</b></p> <p><b>5L</b></p>

	Milk Products - Definition, Classification, Composition, Food & Nutritive value, physicochemical properties, Manufacture and uses of Cream, Butter, Cheese and Ice-Cream.	5L
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## Practicals

1. Preparation of curd and butter milk
2. Preparation of cheese and cream
3. Preparation of flavored milk
4. Preparation of cream
5. Preparation of butter
6. Detection of adulterants like urea in milk sample

### References:

- 1) Outline of Dairy Technology- Oxford University press By- Sukumar De. (Edition- 1983)
- 2) Dairy Chemistry and Animal Nutrition- M.M. Rai, Kalyani, Publishers, New Delhi 3<sup>rd</sup>Edition, 1980
- 3) Fundamentals of Dairy Chemistry- B.H. Webb, A.H. Hohsson, J.A. Alford, CBB, Publishers and Distributors.
- 4) Milk and Milk Products- C.H. Eckles, H. Macy, Tata McGraw Hill Publishing Company Ltd.
- 5) Chemistry and Testing of Dairy Products- H.V. Atherton, J.A. New Lander, CBS, Publishers and Distributors.
- 6) Dairy Microbiology, Dr. K.C. Mahanta. Omsons Publication New Delhi.