



Sion (West), Mumbai – 400022.

Department of Chemistry

Program: B.Sc.

**Skill Enhancement Course (SEC) Course in
Chemistry**

Syllabus for F.Y.B.Sc. Semester II

(To be implemented from 2023 – 2024)

**Credit Based Semester and Grading System
National Education Policy**

Skill Enhancement Course (SEC) in Chemistry

Solution Chemistry

SEMESTER – II		
1	:	Solution Chemistry
2	:	Practical

Skill Enhancement Course (SEC) in Chemistry

SOLUTION CHEMISTRY

Course Code:

Credits: 1

SEMESTER – I

Unit – 1, 1Hr /Week		15 H
1 Solution Chemistry:		15 H
1.1	<p>Solution Chemistry: Introduction to Mass, weight, volume, density and its units Calibration of burette, pipette, standard flask and weighing balance</p> <p>Solutions: Types of solutions, forming of solutions, solute and solvents, like dissolve likes, Universal solvents, polar solvent and non-polar solvents Solubility: Saturated solution, super saturated solution, sparingly soluble solution, standard solution, miscibility, immiscibility and layering, Homogeneous and Heterogeneous mixtures, effect of temperature on solubility; effect of pressure on solubility, Solid Hydrates</p>	7 H
1.2	<p>Solution Concentration: Normality, Molarity, Formality, Molality, Mole fraction, Weight ratio, Volume ratio, Weight-to-Volume Ratios, Mass Percent concentration, Parts Per billion and Parts Per million (Numericals Expected)</p> <p>Dilution: Calculating Dilution, ion concentrations in Solution</p> <p>Solute solvent interactions: Solvation phenomenon and factors affecting solvation</p> <p>Solubility product: concept and significance (Numericals Expected)</p> <p>Concept of acids and bases in solution: Acid and basic strength and structure, Types and applications: Buffer solution, Indicators.</p>	8 H

SUGGESTED REFERENCE

1. A text book of Physical Chemistry by K. L. Kapoor.
2. Essentials of Physical Chemistry by B.S. Bahl, Arul Bahl and G.D. Tuli.
3. Chemical Kinetics by Keith J. Laidler.
4. Mathematical preparation for Physical Chemistry by F. Daniel.
5. Principle of Physical Chemistry by Maron and Pruton.
6. Textbook of physical chemistry, 2nd Edition by Samuel Glasstone.
7. Fundamental of Analytical Chemistry: Skoog D.A. & West D.M. Saunders, College Publication.

PRACTICAL COURSE SEC CHEMISTRY LABORATORY**Solution Chemistry Practical****Course Code:****Credits: 1 Credits (2 hours)**

1	Solution Chemistry Practical
	<ol style="list-style-type: none"> 1. Safety measures in chemical laboratory 2. Determination of standard deviation for acid-base titration 3. Preparation of standard solution of oxalic acid and sodium carbonate 4. Preparation of indicators: Methyl orange, Erichrome black T, starch, methylene blue 5. Calibration of glass wares 6. Determination of concentration of oxalic acid and potassium permanganate 7. Standardization of EDTA solution 8. Preparation of buffer solution using buffer tablet and standardization of pH meter 9. Standardization of sodium thiosulphate solution 10. Standardization of sodium hydroxide/ potassium hydroxide 11. Calibration of conductometer and determination of cell constant using 0.1 molar KCl 12. Determination of density of given liquid using specific gravity bottle

SUGGESTED REFERENCE:

1. Introduction to Instrumental Analysis, R. D. Brown, McGraw Hill.
2. Instrumental Methods of Analysis, H. H. Willard, L. L. Meritt and J. A. Dean, Affiliated East-West Press.
3. Quality in the Analytical Chemistry laboratory –Neil T. Crosby, Florence Elizabeth Prichard, Ernest J. Newman – John Wiley & Sons Ltd.
4. Principles and Practice of Analytical Chemistry-Fifield F.W. and Kealey D., Black well Science.

MODALITY OF ASSESSMENT

Will be as per the guidelines of NEP and Board of Examination and conveyed to BOS for approval in due course of time.