Faculty of Science and Humanities

M.Sc.(Chemistry) Semester -II

Effective from Academic Year 2026-27

Branch Name:	M.Sc. Chemistry
Program Code:	SC203
Course Name:	Chemistry Practical-II
Course Code:	2SC2030205
Pre-requisite Course:	Basics chemistry practical up to B.Sc.

Course Objectives:

- To develop laboratory skills by performing basic and advanced chemistry experiments accurately and safely.
- To understand and apply fundamental chemical principles through hands-on experiments in analytical, physical, organic, and inorganic chemistry.
- Learn how to interpret experimental observations and analyze data using appropriate calculations, graphs, and error analysis.
- To enhance problem-solving and critical thinking abilities through experimental design and result interpretation.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)					Evaluation Scheme (Marks)				
			Credit		Theory(Marks)		Practical(Marks)		
Lecture (L)	Tutorial (T)	Practical (P)	T	P	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total (Marks)
-	-	16	-	8	-	-	100	100	200

List of Experiment:

1 Inorganic Chemistry Practical-II

Add mixture (Minimum 3)

Inorganic preparation (Minimum 3)

2 Organic Chemistry Practical-II

Qualitative analysis (Minimum 6)

Separation and identification of unknown components of ternary semi-solid/liquid organic mixture (solid+solid+liquid/ solid+liquid+liquid/ liquid+liquid+liquidmixture having water soluble or insoluble component)

3 Physical Chemistry Practical-II

1. To determination of molecular weight of high polymer by Viscosity method.
2. To determine the strength of strong and weak base in a given mixture using a pH meter.
3. Conductometry
   a. To determine the strength of strong and weak acids in a given mixture using a conductometer.
   b. Determination of the velocity constant, order of the reaction and energy of activation for sponificification of ethyl acetate by sodium hydroxide conductometrically.
4. Potentiometry
   a. To determine the strength of strong and weak acids in a given mixture using a potentiometer.
   b. To determine the solubility of the given salts, AgCl/AgBr/AgI using a potentiometer

4 Analytical Chemistry Practical-II

1. Water analysis (D.O.)
2. Water analysis (C.O.D.)
3. To determine the acid value of an oil sample.
4. To determine saponification number by given oil sample.
5. Estimation of binary mixture by EDTA (Cu^{+2} and Ni^{+2}).
6. Estimation of binary mixture by EDTA (Ca^{+2} and Zn^{+2}).
7. Estimation of binary mixture by EDTA (Ca^{+2} and Mg^{+2}).
8. Estimation of binary mixture by EDTA (Bi^{+2} and Pb^{+2}).

Reference Books:

1. Comprehensive Practical Organic Chemistry by V. K. Ahluwalia.
2. Advanced Inorganic Chemistry by Dr. Keemtilal.
3. Practical Physical Chemistry by Renu Gupta.

Course Learning Outcomes (CLO):On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Perform quantitative inorganic analysis of add mixtures and prepare selected inorganic compounds using standard laboratory techniques.	2. Understanding 3. Applying 4. Analyzing
CLO2	Analyze organic compounds by carrying out systematic qualitative analysis and separate as well as identify the components of ternary organic mixtures using appropriate physical and chemical methods.	2. Understanding 3. Applying
CLO3	Apply physicochemical techniques such as viscometry, pH metry, conductometry, and potentiometry to determine molecular weight, reaction kinetics, equilibrium parameters, solubility, and the strength of acids and bases.	2. Understanding 4. Analyzing 5. Evaluting
CLO4	Estimate important physicochemical parameters of water and oils, including dissolved oxygen (DO), chemical oxygen demand (COD), acid value, and saponification value using standard analytical procedures.	3. Applying 4. Analyzing 5. Evaluting
CLO5	Calculate experimental results, analyze errors, interpret observations, and prepare laboratory reports with appropriate conclusions.	4. Analyzing 5. Evaluting

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)																PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1	2
CLO1																	2	2
CLO2	2				2	1											3	3
CLO3	1					2											2	3
CLO4					2	1				3							2	3
CLO5										3							3	2

3:High, 2:Medium, 1:Low