HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Course Name **: B. Sc. Chemistry** **Semester : IV**
PROGRAM CODE : SCIUG102
COURSE CODE : SC23MIDSCCHE402

Type of course : Minor Elective course MIDSC
Name of course : Simplified chemistry I **Total Marks : 50**

Effective from June 2023 Under NEP 2020

Total Credits : 02 Teaching Hours per Week: 02 Teaching Hours per Semester: 30	Theory	External 25 Marks Internal 25 Marks

Course Objectives:

1. To understand the core concepts of electrochemistry.
2. To understand role of electrodes and their applications.

Course Outcome:

1. Students will have a firm foundation in the fundamentals and application of elctro chemistry and scientific theories applicable to Analytical, Inorganic, Organic and Physical Chemistries.
2. Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
3. Students will be skilled in problem solving practicals related to generation of current.

Unit	Topic	Credit	Hr
1	**Electro Chemistry** Introduction of terms: Oxidation, Reduction, Redox, Anode Cathode, Electrode, Half-cell Oxidation & Reduction Potential Electo chemical Cell (Galvanic Cell) 2 Representation Cell. Electo chemical series and its Significance. Nearest Equation of cell EMF and Single electrode potential. Describe the Electrode (Metal – Metal ion Electrode, Standard – Hydrogen Electrode, Calomel Electrode, Weston standard Electrode, Glen Electrode, Quienhydron Electrode)	1	15

	Application of cell potential to find out Equilibrium constant, Free Energy and PH Numericals		
2	**Inorganic Polymers** Classification of Inorganic polymers Polymers containing boron: Borazine, preparation and properties and structure of Borazine, Substituted borazines, Boron nitride Polymers containing Silicones, preparation and properties of Silicones, Types of Silicones. Plymers containing phosphorus, Types of Polymers containing phosphorus, Preparation and properties and Structure of Poly phosphonitritic chlorides, Plyorthophosphoric acid, Borophosphateglases Polymeric compounds of Sulphur, Nirides of sulphur,Thiazylhalides,Imides of sulphur	1	15

Books Recommended:

1. Electroanalytical methods, Allen j, Bard, Springer, 2000.
2. Electrochemistry by S. Glasstobne, 3rd edn, Oxford University Press, 1956.
3. 'Physical chemistry by s. Glasston, Oxford University Press, 1960.
4. 'electrochemistry by I O Bockris,, vol 1, 2, 3, Francis and taylor, 1990.
5. Inorganic polymers by James E. Mark, Oxford publisher 2005.
6. Inorganic polymers by Chatwal, Himalyan publishers, 2018.

Further Reading:

1. Essentials of physical Chemistr by B.S.Bahal, ArunBahal. G. D.Tuli.
2. Physical Chemistry by P.W.Atkins. 5th edn.Oxferd 1994 7thedn-2002.

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

Program Name **: B. Sc. Chemistry** **Semester : IV**
PROGRAM CODE : SCIUG102
COURSE CODE : SC23PMIDSCCHE402

Type of Course : Practicals Minor (Elective) Discipline Specific Course PMIDSC
Name of Course : Practical's for simplified chemistry I

Total Marks : 50

Effective from June 2023 Under NEP 2020

Total Credits : 02 Teaching Hours per Week: 04 Lab Teaching Hours per semester:60 Minimum Number Practicals to be Performed: 10	Practicals	External 25 Marks Internal 25 Marks

Course Objectives:

1. To learn complexometric titrations.
2. Preparation of solutions and required standardization.

Course Outcomes:

1. Students will gain a comprehensive knowledge and skills in standardization and preparation of solutions for carrying out complexometric titrations.
2. To understand basic methods to estimate the metal ionss on the basis of complexation with ligands.

Sr.No.	List of Practicals	Credit	Hr
1	Inorganic Quantitative analysis. (Any 10) 1. Estimation of Ca by complexometric titration. 2. Estimation of Mg by complexometric titration. 3. Estimation of Cu by EDTA complexometric titration 4. Estimation of Cu by Iodometrical titration 5. To estimate ferrous (Fe^{+2}) and ferric (Fe^{+3}) ions given in the mixture. 6.To determine the strength of Ferrous ammonium sulphate by $K_2Cr_2O_7$. 7. To determine the amount of Zn by EDTA Method. 8. To determine the amount of Ni by EDTA Method.	1	30

	9. Estimation of Glucose/Aniline/Phenol 10. To determine the amount of Aniline by Brominating Method. 11. To determine the amount of Phenol by Brominating Method. 12. To determine the amount of Glucose by oxidation Method		

Books Recommended:

1. Practical Chemistry : For B.Sc. I, II And III Year Students of All India Universities By Pandey O.P. & et Al. publisher S. Chand's, Paperback December 2010.

2. Basic Principles of Practical Chemistry,
by V. Venkateswaran (Author) publisher S. Chand's, Paperback – 1 January 2012

3. Chemistry In Laboratory-B.Sc.-Sem-I-Vi-Hons.
By Dr.Subhojit Ghosh (Author), Dr.Madhushree Das Sharma (Author), publisher CBCS, Paperback – 1 January 2019.

Further Reading:

1. Practical Chemistry, By Sonia Ratnani (Author), Swati Agrawal (Author), Sujeet Kumar Mishra (Author) publisger Mc Graw Hill, 1st Edition Paperback – 16 September 2020.

2. B.Sc. Practical Chemistry First Year By Paperback, Dr. M.M.N. Tandon, Publisher: Shiva Lal Agarwal & Company, 2020.