



Code	Subject Title	Cr. Hrs	Semester
CHEM-204	Chemistry Lab-IV (General Chemistry)	1	IV
Year	Discipline		
2	Botany, Zoology, Chemistry-I, II		

- 1) Verification of first law of Faraday by electroplating of  $\text{CuSO}_4$ ,  $\text{NiSO}_4$ ,  $\text{Cr}_2(\text{SO}_4)_3$ ,  $\text{Ag}^+$  and  $\text{Au}^+$  CN.
- 2) Conductometric and potentiometric titration using conductivity bridge and pH meter.
- 3) Measurement of reduction potential using of Zn, Cu, Ag, Al etc. by using calomel electrode.
- 4) Verification of Langmuir Isotherm.
- 5) Thin layer chromatography.

**Preparations:**

- 1) Ferric Alum
- 2) Potassium tri-oxalato aluminate
- 3) Sodium Thiosulfate
- 4) Amm. Coppr (II) Sulphate

**Iodometry:**

- 1) Determination of iodide and KI in the given sample solution.
- 2) Standardization of  $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$  solution.
- 3) Determination of amount/ $\text{dm}^3$  of  $\text{Cu}^{2+}$  in  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  using  $\text{Na}_2\text{S}_2\text{O}_3$  and KI.
- 4) Determination of number water molecules (x) in  $\text{CuSO}_4 \cdot x\text{H}_2\text{O}$ .

**Preparation of Organic Compounds:**

Preparation and techniques of purification of tribromophenol, nitrobenzene, aspirin, ethyl benzoate and benzoic acid from toluene, butyl chloride, acetanilide.

**Estimations (volumetric):**

- 1) Determination of molecular weight of a carboxylic acid.
- 2) Estimation of amide group and glucose.

**Recommended Books:**

1. Crocleford H.D. H.W. Biard F.W. Getzen & J.W. Nowell, "Laboratory Maual of Physical Chemistry" 2<sup>nd</sup> Eddition John Wiley & Sons London.
2. Skoog, D.A., D.M. West and F.J. Holler, "Analytical Chemistry" 6<sup>th</sup> Ed. Saunders College Publications (1994).
3. Javed Iqbal Amin, "Theory and Practice of Chromatography", Higher Education Commission, Islamabad. (2002).
4. James A. Moore, "Experimental methods in Organic Chemistry", Holt-Saunders Int.,1983.
5. R.L. Shriner, R.C., Fuson D.V. Curtin and T.C. Morrill "The systematic identification of organic compounds, 6<sup>th</sup> Ed. John Willey & Sons 1979.