

**CH 152 BS**

**ENGINEERING CHEMISTRY LABORATORY**

Instruction	: 3 Hours/Week
Duration of SEE	: 3 Hours
SEE	: 50 Marks
CIE	: 25 Marks
Credits	: 1.5

**Course Objectives:**

The student will learn

- Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
- To determine the rate constant of reactions from concentrations as a function of time.
- The measurement of physical properties like surface tension and viscosity.
- Estimation of HCl and CH<sub>3</sub>COOH by conductometric technique

**Laboratory out comes:**

The chemistry laboratory course use consists of experiments illustrating the principle of chemistry relevant to the study of science and engineering.

The students will learn to:

- Estimate rate constants of reactions from concentration of reactants / products as a function of time.
- Measure molecular /system properties such as surface tension ,viscosity, conductance of solutions, redox potentials and chloride content of water
- Synthesize a small drug molecules

**Water analysis:**

- 1) Determination of total hardness of water by EDTA method
- 2) Determination of Chloride content of water

**Conductance measurements:**

- 3) Determination of cell constant.
- 4) Estimation of HCl and CH<sub>3</sub>COOH by conductometric titration

**Potentiometric measurements:**

- 5). Estimation of HCl by potentiometric titration.
- 6). Estimation of ferrous iron by potentiometric titration.

**Kinetic Studies:**

- 7).Determination of rate constant of acid catalyzed hydrolysis of methyl acetate.
- 8).Study of kinetics of Iodine-Clock reaction.

**Synthesis of a drug molecule:**

- 9).Synthesis of Aspirin.

**Distribution Studies:**

- 10).Determination of partition coefficient of acetic acid between Butanol and Water.

**Physical constants:**

- 11).Determination of a viscosity of a given liquid.
- 12).Determination of surface tension of a given liquid.

**Colorimetry:**

- 13) Verification of Beers law and Estimation of the given permanganate.
- 14) Verification of Beers law and Estimation of the given CuSO<sub>4</sub>.

**References:**

1. Senior Practical Physical Chemistry, B.D.Khosla, A.Gulati and V.Garg (R.Chand&Co.,Delhi)
2. An Introduction to Practical Chemistry ,K.K.Sharma and D.S.Sharma ( Vikas publishing,N.Delhi)