

Industrial Chemical Analysis Lab (Chemical Engineering)

Course Code: 22BC1107

L	T	P	C
0	0	3	1.5

Course Outcomes:

At the end of the course, students will be able to

CO1: Determine the water quality parameters (L3)

CO2: Apply principles of chromatographic techniques. (L3)

CO3: Use Flame photometry and AAS to determine metal ions (L3)

CO4: Determine the strength of acids, bases and salts by electro analytical techniques. (L3)

CO5: Apply spectrophotometry for the determination of metal ions (L3)

Titrimetry and Gravimetry

1. Determination of total hardness of water sample.
2. Determination of dissolved oxygen.
3. Determination of alkalinity of water.
4. Determination of barium as barium sulphate

Conductometric Measurements

5. Conductometric titration of strong acid versus strong base
6. Conductometric titration of weak acid vs strong base

Potentiometric and P^H metric Measurements

7. Preparation of buffers and calibration of PH meter.
8. pH metric titration of strong acid versus strong base
9. Potentiometric determination of Fe(II) using potassium permanganate.

Spectrophotometry

10. Determination of iron (II) by O-phenanthroline method.
11. Determination of iron (III) by Thiocyanate method.

Chromatographic Techniques

12. R_f Value of an amino acid by thin layer chromatography.
13. Separation of methyl orange and phenolphthalein from the given mixture by paper chromatography.
14. Separation of mixture of components gas chromatography

Refractometry

15. Determination of refractive index.

Flame photometry and atomic absorption spectrophotometry

16. Determination of sodium by flame photometry
17. Determination of potassium by AAS.

Reference Books:

1. N.K Bhasin and Sudha Rani, *Laboratory Manual on Engineering Chemistry*, 3rd edition, Dhanpat Rai & Sons, New Delhi, 2007.
2. P.C. Jain and M. Jain, *Engineering Chemistry*, 15th edition, Dhanapat Rai & Sons, Delhi, 2014.
3. A.I.Vogel, *A Textbook of quantitative chemical analysis*, 6th edition, Pearson Education Pvt. Ltd, 2002.