

DEPARTMENT OF CHEMISTRY

VALUE-ADDED COURSE


TOPIC-TECHNIQUES OF CHEMICAL ANALYSIS

▪ OBJECTIVES OF THE COURSE:

1. To make our students well versed about the basic chemical techniques.
2. It also aims at learning of principles to deal with operation of modern instrumental techniques.
3. To equip our students with cutting-edge research ideas.
4. It will improve their acquaintance with better problem solving methodologies.

▪ COURSE OUTCOME:

1. Completion of this course will supplement and enhance the boundaries of knowledge our students.
2. It will also help in skill-development of students enabling them to become better researchers, scientists and analysts etc.
3. They can analyze the quality of soil and water which will help in determining the extent of environmental pollution and usefulness of soil and water.
4. On completion of this course our students will be better equipped and encouraged to work at different reputed State and National level organizations like DRDO, BARC, NTPC, IISc. Bangalore, IITs, NISER and IISERs etc. They can also get placement



opportunities in Pharmaceutical Industries and Industries dealing with paints and pigments, Fertilizer Industries etc.

- **Course Duration: Minimum 30 hours.**
- **Eligibility Criteria: +3 Final Year Students**
- **Seats: 48**
- **Mode of Selection: Compulsory for all third year students.**
- **Tentative Commencement of the course: 15-02-23**

- **UNIT-1: TECHNIQUES IN INORGANIC ANALYSIS**

1. Determination of Biological Oxygen Demand (BOD) of the supplied water sample.
2. Determination of Chemical Oxygen Demand (COD) of the supplied water sample.
3. Determination of Total Hardness of water by complexometric titration.
4. Estimation of Ca by Substitution titration using EDTA.
5. Determination of Aluminium as Aluminium 8-Hydroxy quinolate.

- **UNIT-2: TECHNIQUES IN ORGANIC ANALYSIS**

1. Vitamin C Clock reaction.
2. Diels-Alder reaction in water and reaction between Furan and Maleic Acid in water at room temperature.
3. Extraction of DNA from mashed onion.
4. Photo-reduction of Benzophenone.

5. Extraction of Caffeine from Tea leaves.
6. Preparation and use of Methyl Orange- An Azo dye.

▪ **UNIT-3: TECHNIQUES IN PHYSICAL ANALYSIS**

1. Separation of a mixture of o- and p-nitro phenol or o- and p- amino phenol by thin layer chromatography.
2. Basic principles and techniques of Column and Paper Chromatography.
3. To determine the partition co-efficient of benzoic acid in between water & benzene and to show that it dimerizes in benzene.
4. Estimation of Glycine by pH metry.
5. Determination of PO_4^{3-} in natural water by colorimetry.

▪ **UNIT-4: TECHNIQUES IN POLYMER ANALYSIS**

1. Determination of molecular mass M_v of polyvinyl alcohol viscometrically.
2. Redox-polymerisation of acryloamide in homogeneous aqueous method.

Reference Books:

1. University Practical Chemistry by P.C. Kamboj- Vishal Publishing Company.
2. Polymer Chemistry by Viswanathan and Gowarikar.
3. Practical Books of Indira Gandhi National Open University-CHE-03- L, CHE-12 L.