Annexure 2

APPLIED CHEMISTRY LAB

Course Code: CHE 121 **Credit Units: 01**
Total Hours: 20

Course Objective:

Principles of chemistry relevant to the study of science and engineering have clarity of understanding through experiments. Learning process and learning outcomes get enhanced through experiments relevant to and commensurate with theoretical knowledge. The lab course is designed to teach the students the basics and advanced chemical principles through experiments.

Four basic sciences, Physics, Chemistry, Mathematics and Biology are the building blocks in engineering and technology. Chemistry is essential to develop analytical capabilities of students, so that they can characterize, transform and use materials in engineering and apply knowledge in their field. All engineering fields have unique bonds with chemistry whether it is Aerospace, Mechanical, Environmental and other fields; the makeup of substances is always a key factor, which must be known. For electronics and computer science engineering, apart from the material, computer modeling and simulation knowledge can be inherited from the molecule designing. The upcoming field of technology like Nanotechnology and Biotechnology depends fully on the knowledge of basic chemistry. With this versatile need in view, course has been designed in such a way so that the student should get an overview of the whole subject starting from the very basic application of principles.

Course Contents:

List of experiments: [Any 10]

1. Chemical analysis of water for determination of hardness. (2 Hrs)
2. Chemical analysis of water for determination of Alkalinity. (2 Hrs)
3. Chemical analysis of water for determination of residual Chlorine. (2 Hrs)
4. Synthesis of urea - formaldehyde resin. (2 Hrs)
5. Determination of dissolved oxygen in water. (2 Hrs)
6. Determination of surface tension of a given liquid. (2 Hrs)
7. Plant pigments separation by paper chromatography. (2 Hrs)
8. Conductometric titration. (2 Hrs)
9. Determination of water modules of crystallization in Mohr's salt. (2 Hrs)
10. Application of distribution law in the determination of equilibrium constant. (2 Hrs)
11. Determination of amount of Oxalic acid and Sulphuric acid in one litre of solution. (2 Hrs)
12. pH metric titration. (2 Hrs)

Course Outcome:

The students will learn to measure molecular/system properties such as:

- Surface tension.
- Viscosity.
- Conductance of solutions.
- Redox potentials.
- Dissolved oxygen, Chloride content of water etc.

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

A: Attendance, CT: Class Test, S/V/Q: Seminar/Viva/Quiz, HA: Home Assignment, EE: End Semester Examination

Text & References:

1. Pandey O.P. & et Al. Practical Chemistry (2010), S. Chand New Delhi. ISBN:978-8121908122.
2. Das, Subash Chandra. Advanced practical chemistry, 3/e rev. / Kolkata Quality Printing 2003
3. Vogel's Quantitative Chemical Analysis. (2009). India: Pearson Education. ISBN 9788131723258
4. S K Bhasin & Sudha Rani. Laboratory Manual on Engineering Chemistry.(2019); Dhanpat Rai Publishing Company. ISBN: 978-8187433132
5. Experiments in Applied Chemistry, Dr. Sunitta Rattan; CATSON Book Publishers.