# SARVAJANIK UNIVERSITY

## SARVAJANIK COLLEGE OF ENGINEERING AND TECHNOLOGY

## BACHELOR OF TECHNOLOGY

| B.Tech | I | Semester | I/II | Teaching Scheme | | | | Evaluation Scheme | |
|---|---|---|---|---|---|---|---|---|---|
| Subject Name | Engineering Chemistry – Lab | | | L | T | P | Credits | CCE | SEE |
| Subject Code | BTAS 21102 | | | - | - | 2 | 1 | 25 | 25 |
| Type of course | BSC: Basic Science Course | | | CCE : Continuous and Comprehensive Evaluation<br>SEE : Semester End Evaluation | | | | | |
| Prerequisite | Fundamentals of Organic / Inorganic / Physical / Analytical Chemistry | | | | | | | | |
| Rationale | Material/Substance studies is the heart of understanding the Applied Chemistry which further helps in preparing ground to understand engineering better. | | | | | | | | |

| Course Outcomes (COs): At the end of the course, students will be able to | | Marks % weightage |
|---|---|---|
| CO – 1 | Identify the quality of water and relate the different techniques of water treatment. | 20 |
| CO – 2 | Determine the complexity of engineering problems and utilize correct metals and polymers | 20 |
| CO – 3 | Describe the importance and application of engineering materials | 40 |
| CO – 4 | Interpret the methods of functional chemistry as a logical means of problem solving | 10 |
| CO – 5 | Distinguish the ranges of the electromagnetic spectrum used and apply it for exciting different molecular energy levels in various spectroscopic techniques and use it further to derive the logical issues | 10 |

**LIST OF PRACTICALS**

1. Analysis of Steel Sample.
2. Analysis of Pyrolusite Ore.
3. Analysis of Brass Alloy.
4. Estimation of Total Hardness.
5. Determination of Concentration of Unknown Solution Spectrophotometrically.
6. Determination of pH and Conductance of the given solution.
7. Determination of Alkalinity of a given Water Sample.
8. Estimation of $NH_3$ and $NH_4Cl$ in the given polluted water sample.

9. Determination of Saponification value of oil.
10. Determination of chloride content of water.
11. Study of Pyrolysis reaction of $ZnCO_3$.
12. Determination of moisture content in Coal.
13. Gravimetric estimation of $Na_2CO_3$ & $NaHCO_3$.
14. Study Wet Corrosion loss of Steel by weight loss method using electrochemical theory.
15. Stress Corrosion Cracking of Brass in $NH_3$ Solution.
16. Estimation of glucose by hypoiodite method.
17. Organic/Inorganic Spotting.
18. Synthesis of Polymer

**Recommended Reference Books**

1. Laboratory Manual of Engineering Chemistry by S K. Bhasin & Sudha Rani, Dhanpat Rai Publications (P)Ltd.,2nd Edition,2015
2. Engineering Chemistry with Laboratory Experiments by M S. Kaurav, PHI Learning Pvt. Ltd., 1st Edition,2011
3. Vogel's textbook of Quantitative Chemical Analysis by Arthur I Vogel, Revised by Jeffery et. al., Addison Wesley, Longman Ltd.5th Edition,1989

**CO-PO-Mapping**

| CO | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO – 1 | 3 | 1 | 1 | 1 | - | 2 | 2 | - | - | - | - | 1 |
| CO – 2 | 3 | 3 | 1 | - | - | 1 | 2 | - | - | - | - | 1 |
| CO – 3 | 3 | 2 | 3 | - | 1 | 1 | 2 | - | - | - | - | 1 |
| CO – 4 | 3 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | - | - | - | 1 |
| CO – 5 | 3 | 2 | 1 | 3 | 2 | 1 | 1 | 1 | - | - | - | 1 |

**List of Open Source/learning website/Other Details if any:**

- https://vlab.amrita.edu/?sub=2