Course Name Chemistry Laboratory

Course Code CH(EE)191

Course Credit 2

Contact Hour 3P

Prerequisite

Course Objective

The objectives of this course are

1. Develop the knowledge for solving the industrial problems related to water quality parameters (hardness, alkalinity, conductance, dissolved oxygen).
2. Build idea about the properties of nanomaterials to apply in the field of semiconductor
3. Fabricate Bakelite which is used to form electrical insulator parts like switches, plugs, switchboards etc.
4. Develop the ability to apply the technical knowledge obtained to solve real life problems and to develop the skilful workforce to carry out the consultancy services to the various related industries.
5. Develop a creative mindset towards innovation and entrepreneurship that serve to the need of the industry and society.
6. Grow the quality like skill, team work, leadership and professional ethics, thus contributing towards the growth and development of society.

Course Outcome

On completion of the course students will be able to

1. Measure water quality standard to be applied in industrial purpose (e.g. solar cell).
2. Modify the conductive properties of the materials.
3. Fabricate polymer based materials (e.g. Bakelite) which is used to form electrical insulator parts.
4. Understand the professional and ethical responsibility.
5. Function as an individual and as member in multidisciplinary teams.
6. Communicate effectively, write reports and make effective representation using available technique.
7. Apply the knowledge and understanding of project management, Engineering resource management and cost analysis while implementing projects.
8. Recognize the need for, and the concepts of learning to learn, and engage in lifelong learning.

CO Mapping with departmental POs

H: High, M: Medium, L: Low

	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	H	L										
CO 2	H	M	M	M								
CO 3	H	L	M	M								
CO 4								H	M	H	M	M
CO 5								M	H	H	M	M
CO 6								H	M	H	M	M
CO7								M	H	M	H	M
CO8								M	M	H	M	H

Course Content

1. To Determine the alkalinity in given water sample.
2. Redox titration (estimation of iron using permanganometry)
3. To determine calcium and magnesium hardness of a given water sample separately.
4. Preparation of phenol-formaldehyde resin (Bakelite).
5. Heterogeneous equilibrium (determination of partition coefficient of acetic acid between n-butanol and water).
6. Conductometric titration for determination of the strength of a given HCl solution by titration against a standard NaOH solution.
7. pH- metric titration for determination of strength of a given HCl solution against a standard NaOH solution.
8. Determination of dissolved oxygen present in a given water sample.
9. To determine chloride ion in a given water sample by Argentometric method (using chromate indicator solution).

Text Books:

1. Essential of Experimental Engineering Chemistry: shashi Chawla
2. Laboratory Manual on Engineering Chemistry: S.K. Bhasin and Dr. Shudha Rani

Reference Books:

1. An Advanced Course in Practical Chemistry: Nad, Mahapatra & Ghosal