

ENGINEERING CHEMISTRY LABORATORY

I Semester: CSE IT EEE II Semester: AE ECE ME CE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AHSB09	Foundation	L	T	P	C	CIA	SEE	Total
		-	-	3	1.5	30	70	100
Contact Classes: Nil		Tutorial Classes: Nil		Practical Classes: 45			Total Classes: 45	
<p>OBJECTIVES: The course should enable the students to:</p> <ol style="list-style-type: none"> I. The course intends to provide an overview of the working principles and mechanism of reactions. II. This course relies on elementary treatment and qualitative analysis and makes use of simple models and equation to illustrate the concepts involved. III. To provide an overview of preparation and identification of organic compounds. IV. To gain the knowledge on existing future upcoming devices, materials and methodology <p>COURSE LEARNING OUTCOMES (CLOs): The students should enable to:</p> <ol style="list-style-type: none"> 1. Extrapolate the knowledge of preparation of acetyl salicylic acid. 2. Use innovative methods to improve the quality of soft water for industrial purpose at cheaper cost. 3. Evaluate conductometry and conductometric titrations. 4. Estimate potentiometry and potantiometric titrations. 5. Compare the results of experiments with potentiometry. 6. Describe potentiometry and potantiometric titrations. 7. Identify the formula for viscosity, and explain each variable. 8. Explain certain properties of water using the concepts of cohesive forces and surface tension. 9. Develop theoretical aquatic chemistry basis and use the principles for the evaluation of water quality. 10. Describe the rate constant for a reaction and elementary steps in the reaction mechanism. 11. Explore the basic knowledge of adsorption. 12. Understand principles and their practical application chromatographic separation. 								
LIST OF EXPERIMENTS								
Week-1	PREPARATIONS OF ORGANIC COMPOUNDS							
Synthesis of Aspirin.								
Week-2	VOLUMETRIC ANALYSIS							
Determination of total hardness of water by complex metric method using EDTA.								
Week-3	CONDUCTOMETRIC TITRATIONS							
Estimation of an HCl by conduct metric titrations.								

Week-4	POTENTIOMETRIC TITRATIONS
Estimation of HCl by potentiometric titrations.	
Week-5	CONDUCTOMETRIC TITRATIONS
Estimation of Acetic acid by Conduct metric titrations.	
Week-6	POTENTIOMETRIC TITRATIONS
Estimation of Fe ²⁺ by Potentiometry using KMnO ₄ titrations.	
Week-7	PHYSICAL PROPERTIES
Determination of surface tension of a given liquid using stalagmometer.	
Week-8	PHYSICAL PROPERTIES
Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.	
Week-9	VOLUMETRIC ANALYSIS OF ARGENTOMETRY
Determination of chloride content of water by Argentometry.	
Week-10	CHEMICAL KINETICS
Determination of rate constant of acid catalyzed hydrolysis of methyl acetate.	
Week-11	ADSORPTION TECHNIQUES
Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal.	
Week-12	CHROMATOGRAPHY TECHNIQUES
Thin layer chromatography calculation of R _f values.	
Text Books:	
<ol style="list-style-type: none"> 1. Vogel's, "Quantitative Chemical Analysis", Prentice Hall, 6th Edition, 2000. 2. Gary D.Christian, "Analytical Chemistry", Wiley India, 6th Edition, 2007. 	
Reference Books:	
<ol style="list-style-type: none"> 1. A text book on experiments and calculation Engg. S.S. Dara. 2. Instrumental methods of chemical analysis, Chatwal, Anand, Himalaya Publications. 	
Web References:	
<ol style="list-style-type: none"> 1. http://www.iare.ac.in 2. https://en.wikipedia.org/wiki/Chemistry 3. https://www.academia.edu/35819111/Btechlab 	