Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim- Goa

Name of Faculty: Dr. Amarja Prashant Naik	**Subject: Chemistry**	
Paper code: CHC- 105 Physical Chemistry (Practical)	**Program: TY BSc**	**Division: Batch II and III**
Academic year: 2024- 2025	**Semester: VI**	**Total Lectures: 60**

Course Objectives:

- To understand and develop the problem-solving skills and hands on experience with reference to concepts studied in theory.

Expected Course Outcome:

- To develop skills for performing conductometric and potentiometric titration, adsorption studies.

Student Learning Outcome:

- Understand the concepts of conductance adsorption isotherms and activation energy solubility product.
- Develop skills of working and set up of electrochemical cells and electrodes.
- Solve numericals on and verify the graph of adsorption isotherms.
- Interpret vibrational spectra of HCl and HBr molecule.
- Determine potential with respect to pH.

Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	28/06/2024	29/06/2024	Nil	Nil	----	-----	1. B.Vishwanathan and P.S. Raghavan, Practical Physical Chemistry. 2. R. L. Madan, Chemistry for degree students Semester V and VI S. Chand Publication 3. Puri Sharma and Pathania Principles of Chemistry Vishal Publication 4. H. Kaur spectroscopy Pragati edition
July	01/07/2024	03/07/2024	08 B-II- (4 hr) B-III (4 hr)	Introduction to physical chemistry practicals: Laboratory safety management	Post Laboratory exercise	Laboratory experiment	
	08/07/2024	10/07/2024	08 B-II- (4 hr) B-III (4 hr)	To study the kinetics of iodine clock reactions.	Post Laboratory exercise	Laboratory experiment	
	15/07/2024	17/07/2024	08 B-II- (4 hr) B-III (4 hr)	To study the kinetics of iodine clock reactions.	Post Laboratory exercise	Laboratory experiment	
	22/07/2024	24/07/2024	08 B-II-	To determine the strength of mixture containing			

				(4 hr) B-III (4 hr)	weak acid and salt of weak base by titrating against standard 0.1N NaOH solution conductometrically		
		29/07/2024	31/07/2024	08 B-II- (4 hr) B-III (4 hr)	To determine the dissociation constant of a weak monobasic acid using pH metry.	Post Laboratory exercise	Laboratory experiment
	August	05/08/2024	07/08/2024	08 B-II- (4 hr) B-III (4 hr)	To determine the percentage composition and amount of halides from a mixture (any two halide) using standard 0.1N $AgNO_3$ solution.	Post Laboratory exercise	Laboratory experiment
		12/08/2024	14/08/2024	08 B-II- (4 hr) B-III (4 hr)	To study the adsorption of Acetic acid by charcoal and to verify Freundlich adsorption isotherm	Post Laboratory exercise	Laboratory experiment

		19/08/2024	21/08/2024	08 B-II- (4 hr) B-III (4 hr)	To study the adsorption of Acetic acid by charcoal and to verify Freundlich adsorption isotherm	Post Laboratory exercise	Laboratory experiment
		26/08/2024	28/08/2024	08 B-II- (4 hr) B-III (4 hr)	To determine the energy of activation of hydrolysis of ethyl acetate (unequal concentration)	Post Laboratory exercise	Laboratory experiment
	September	02/09/2024	04/09/2024	08 B-II-(4 hr) B-III (4 hr)	To determine the energy of activation of hydrolysis of ethyl acetate (unequal concentration)	Post Laboratory exercise	Laboratory experiment
		9/09/2024	11/09/2024	08 B-II- (4 hr) B-III (4 hr)	To determine the energy of activation of hydrolysis of ethyl acetate (unequal concentration)	Post Laboratory exercise	Laboratory experiment
		9/09/2024	11/09/2024	08 B-II- (4 hr) B-III (4 hr)	To determine degree of hydrolysis and hydrolysis	Post Laboratory exercise	Laboratory experiment

				constant of CH3COONa/ NH4Cl		
	16/09/2024	18/09/2024	08 B-II- (4 hr) B-III (4 hr)	To determine Standard Reduction Potential of Zn++/Zn	Post Laboratory exercise	Laboratory experiment
	23/09/2024	25/09/2024	08 B-II- (4 hr) B-III (4 hr)	To determine Standard Reduction Potential of Zn++/Zn	Post Laboratory exercise	Laboratory experiment
	23/09/2024	25/09/2024	08 B-II- (4 hr) B-III (4 hr)	Using vibrational-rotational spectra of HCl molecule; (A) Assign the rotational lines to various transitions.	Post Laboratory exercise	Laboratory experiment
	30/09/2024	02/10/2024	08 B-II- (4 hr) B-III (4 hr)	(B) Calculate (I) The value of B0 and B1, for R and P branches of spectra. (II) Vibrational frequency and (III) Inter nuclear distance	Post Laboratory exercise	Laboratory experiment

October	7/10/2024	9/10/2024	08 B-II- (4 hr) B-III (4 hr)	Using vibrational-rotational spectra of HBr molecule: (A) Assign the rotational lines to various transitions.	Post Laboratory exercise	Laboratory experiment
	14/10/2024	16/10/2024	08 B-II- (4 hr) B-III (4 hr)	(B) Calculate (I) The value of B0 and B1, for R and P branches of spectra. (II) Vibrational frequency and (III) Inter nuclear distance	Post Laboratory exercise	Laboratory experiment
	21/10/2024	22/10/2024	08 B-II- (4 hr) B-III (4 hr)	Journal compilation and certification	Post Laboratory exercise	Laboratory experiment

***Assessment Rubrics**

Component	Max Marks
ISA 1	10
ISA 2	10
Practical	50
Project	---
Semester End Exam	80