Practical Plan

Name of the college: Government College of Arts, Science & Commerce, Sankhali, Goa		
Name of Faculty: Dr. Ranjana Gupta	**Subject: Fundamentals of Chemistry**	
Paper code: CHC-100	**Program: F.Y.BSc.**	**Division:**
Academic year: 2025 - 2026	**Semester: I**	**Total Practical/Labs: 30 hours**
Credits: 1		

Course Objectives:

- To translate certain theoretical concepts learnt earlier into experimental knowledge by providing hands on experience of basic laboratory techniques required for chemistry.
- To introduce the fundamentals and basic techniques of volumetric and gravimetric estimations.

Expected Course Outcome:

At the end of the course students will be able:
CO1: To acquire the knowledge and skill of basic volumetric and gravimetric estimations.
CO3: The students will be able to get hands on experience on the purification techniques for organic compounds.
CO3:The students will be able to get hands on experience on the identification of chemical nature of organic compounds.

Student Learning Outcome:

At the end of the course students will be able:
LO1: Analyze qualitatively any organic compounds.
LO2: Purify and separate organic compounds using various purification techniques.
LO3: Perform volumetric and gravimetric titrations ans estimations.

Month	Practical/Labs Scheduled Date	No. of Practical /Labs planned	List of Experiments	Reference books
July	12-07-2025	1 (Batch III)	Calibration of Burette and Pipettes.	[1-7]
	19-07-2025	1 (Batch III)	To prepare 100 mL of standard 0.1 M $K_2Cr_2O_7$ solution and carry out dilution to 0.05, 0.01, 0.005, and 0.001 M in 100 mL standard flasks	[1-7]

	26-07-2025	1 (Batch III)	Pre-Lab session (Laboratory safety, concept of normality and molarity and stoichiometric calculations)	[1-7]
August	02-08-2025	1 (Batch III)	Volumetry: To prepare 100 ml of 0.1 N KHP solution and standardize the given approximate 0.1 N NaOH solution.	[1-7]
	09-08-2025	1 (Batch III)	Determination of viscosity of two unknown liquids or dilute solutions by using Ostwald's viscometer.	[1-7]
	16-08-2025	1 (Batch III)	Determination of viscosity of two unknown liquids or dilute solutions by using Ostwald's viscometer.	[1-7]
	23-08-2025	1 (Batch III)	Study of the variation of viscosity of an aqueous solution with concentration of solute.	[1-7]
September	06-09-2025	1 (Batch III)	Gravimetric analysis: Determination of percentage composition of the given mixture ZnO + $ZnCO_3$	[1-7]
	13-09-2025	1 (Batch III)	Determination of surface tension of two unknown liquids or dilute solutions by stalagmometer method.	[1-7]
	20-09-2025	1 (Batch III)	Determination of surface tension of two unknown liquids or dilute solutions by stalagmometer method.	[1-7]
	27-09-2025	1 (Batch III)	Distillation of Acetone and determination of boiling point.	[1-7]
October	04-10-2025	1 (Batch III)	Determination of solubility and chemical nature of both solids and liquids. Water insoluble (Acid//phenol/ Base/Neutral) and water soluble (Acid/Neutral) of given compound. (4 compounds)	[8-11]
	11-10-2025	1 (Batch III)	Determination of solubility and chemical nature of both solids and liquids. Water insoluble (Acid//phenol/ Base/Neutral) and water soluble (Acid/Neutral) of given compound. (4 compounds)	[8-11]

References:

[1] S. W. Rajbhoj and T. K. Chondhekar, *Systematic Experimental Physical Chemistry*, Anjali Publication, Second Edition 2000.
[2] Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
[3] O. P. Pandey, D. N. Bajpai, S. Giri, *Practical Chemistry*, S. Chand Publication 2013.
[4] Shikha Gulati, J. L. Sharma & Shagun Manocha, Practical *Inorganic Chemistry,* CBS Publishers, 2017.
[5] G. H. Jeffery J. Bassett J. Mendham R C. Denney, *Vogel's Textbook of Quantitative Chemical Analysis*, 5th Edn., John Wiley, New York. 1989.
[6] J. Mendham, R.C. Denney, J.D. Barnes, M. Thomas, *Vogel's Textbook of Quantitative Inorganic Analysis*, 6th Edn., Pearson Education Asia, 2000.
[7] Svehla, G. *Vogel's Qualitative Inorganic Analysis*, Pearson Education, 2012.

[8] A.I. Vogel, A., R. Tatchell, B. S. Furniss, A.J. Hannaford, *Vogel's Textbook of Practical Organic Chemistry*, 5thEd., Prentice Hall; 2011.
[9] D. Pasto, C. Johnson and M. Miller, *Experiments and Techniques in Organic Chemistry*, 1st Ed., Prentice Hall, 1991.
[10]L.F. Fieser, K.L. Williamson, *Organic Experiments*, 7th edition D. C. Heath, 1992.
[11]R.K. Bansal, *Laboratory Manual in Organic Chemistry*, New Age International, 5thEdition, 2016.

*** Assessment Rubrics**	
Component	**Max Marks**
Practical	25