DEPARTMENT OF CHEMISTRY				*CLASS: II B.Sc. Chemistry*				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Contact Hours/week**	**CIA**	**Ext**	**Total**
III	Major Core practical	20U3CMP3	Volumetric analysis-I	2	3	40	60	100

Nature of Course				
Knowledge and skill			Employability oriented	
Skill oriented	✓		Entrepreneurship oriented	

Objectives:*The objective of this course is to make the student*

(i) To demonstrate basic laboratory technique of titration

(ii) To develop the intellectual and psychomotor skills of the students by imparting knowledge in quantitative analysis.

(iii) To examine the quantitative estimation of inorganic compounds through volumetric techniques.

LIST OF EXPERIMENTS

A. Acidimetry&Alkalimetry:

1. Estimation of Sodium carbonate
2. Estimation of Sodium hydroxide

B. Permanganometry:

1. Estimation of Ferrous ammonium sulphate.
2. Estimation of Oxalic acid

C. Complexometry:

1. Estimation of Magnesium by EDTA Method.
2. Estimation of Zinc by EDTA Method.

Books for reference:

1. O.P. Pandey, N. Bajpai, S. Giri, "Practical Chemistry" S. Chand and Co Ltd., ISBN: 9788121908122, 9788121908122, 2010.
2. H, W. Schimpf "A text book of volumetric analysis", Biolife Publishers, ISBN: 978-1117262451, 1117262456, 2009.
3. P. M. Pherson, "Practical volumetric analysis" RSC publications, ISBN: 978-1849739146, 1849739145, 2014.
4. V. Venkateswaran , R. Veeraswamy, A.R. Kulandaivelu, Basic Principles of Practical Chemistry, S. Chand & Co., New Delhi, 1997.

Web resources:

1. http://www.federica.unina.it/agraria/analytical-chemistry/volumetric-analysis/
2. https://byjus.com/chemistry/volumetric-analysis/
3. https://nptel.ac.in/noc/courses/noc20/SEM1/noc20-cy02/
4. https://chemistry.tcd.ie/assets/pdf/Preliminary%20Course/Titration%20Demonstration.pdf

Rationale for Nature of the course

Volumetric analysis is a widely-used quantitative analytical method. As the name implies, this method involves the measurement of volume of a solution of known concentration which is used to determine the concentration of the analyte.

Activities having direct bearing on Skill development/ Employability/Entrepreneurship

The knowledge of volumetric analysis develops the students approach towards accurate measurement of concentration, molecular mass and stoichiometry of a chemical equation which involves titration techniques.

Course outcomes: After complete successful of this course, the student will be able

CLOs	CLO statement	Knowledge level
CLO1	To get domain knowledge in estimation of inorganic compounds	Up to K2
CLO2	To design the basic laboratory techniques of volumetric analysis	Up to K3
CLO3	To develop the skills for doing any titrations and recording data	Up to K3
CLO4	To make scientific claims that is supported by their data and other observations	Up to K4
CLO5	To communicate the finding	Up to K2

PO and CLO Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5
CLO1	3	2	2	1	-
CLO2	3	2	2	1	2
CLO3	3	2	2	1	2
CLO4	3	2	2	1	2
CLO5	3	-	2	1	2

PSO and CLO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
CLO1	-	2	-	-	3	3	3
CLO2	-	2	2	-	3	3	3
CLO3	-	2	2	-	3	3	3
CLO4	-	2	-	-	3	3	3
CLO5	-	2	-	-	3	3	3

3-Advance application; 2-Intermediate level; 1-Basic level

Evaluation

Continuous Internal Assessment	**:**	**40 Marks**
External Assessment	**:**	**60 Marks**
Total	**:**	**100 Marks**

Components for CIA	Marks
Internal Test	20
Observation/Record	10
Continuous class assessment	10
Total	**40**

Summative Assessment:

	CLO statement	Knowledge level	Marks
CLO 1	To get domain knowledge in estimation of inorganic compounds	Up to K2	**10**
CLO 2	To design the basic laboratory techniques of volumetric analysis	Up to K3	**10**
CLO 3	To develop the skills for doing any titrations and recording data	Up to K3	**15**
CLO 4	To make scientific claims that is supported by their data and other observations	Up to K4	**20**
CLO 5	To communicate the finding	Up to K2	**5**
Total Marks			**60**

Name of the Course Designers

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2. Dr. M. Karpagavalli