

DEPARTMENT OF CHEMISTRY				CLASS: II B.Sc. Chemistry				
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours/week	CIA	Ext	Total
IV	Major Core practical	20U4CMP4	Volumetric analysis-II	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 intensify basic laboratory technique of titration and estimation*
- (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 and organic compounds through volumetric techniques.*

LIST OF EXPERIMENTS

A. Dichrometry:

1. Estimation of Ferrous iron using internal indicator method
2. Estimation of Ferrous iron using external indicator method

B. Iodimetry:

1. Estimation of $K_2Cr_2O_7$
2. Estimation of Copper.
3. Estimation of As_2O_3 (demonstration only)

C. Organic Estimations:

1. Estimation of Aniline
2. Estimation of phenol.

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. Peter Mc 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	-	-	-
CLO2	3	2	-	-	2
CLO3	3	2	-	-	2
CLO4	3	2	-	-	2
CLO5	3	-	-	-	2

PLO 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

CIA Components	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