SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.25)
Syllabus with effect from the Academic Year 2022-2023

Integrated Bachelor and Master Programmes in Biomedical Science
IBMP (Biomedical Science) Semester (I)

Paper Code	IS01CBMC53	Periods per week	01
Title of the paper	Practical based on IS01CBMC51 & IS01CBMC52	Exam Duration	2 Hrs
Total Credit of the Paper	1	Total Marks	50

Course Objectives: (As per Guidelines – I)	1. To understand animal and plant cells, Learn the internal structure of animal cell and learn procedure of eukaryotic cell staining. 2. Volumetric analysis by acid-base titration. 3. Estimate the percentage of metal ion using complexometric titration. 4. Synthesis of metal complexes.

Unit	Description
1.	• Structure of a plant cell • Structure of an animal cell • Structure of cell organelles (Mitochondria, Chloroplast, Ribosomes, Endoplasmic reticulum, Nucleus) • Mitosis–Squash preparation of Onion root • Meiosis-Squash preparation of anther lobes
2.	**Volumetric analysis** of strong acid [HCl] and weak acids [oxalic acid/Acetic acid] against strong base [NaOH]. **Quantitative Analysis:** Direct Titration (Cu^{+2}, Ni^{+2}, Ca^{+2} and Mg^{+2}) **Synthesis of metal complexes:** a. Hexa-ammine nickel (II) chloride b. Tetrammine Cu(II) sulphate c. Potassium trioxalatochromate (III)

* Units will have the same weightage in the evaluation as suggested in the course outline

Teaching-Learning Methodology (As per Guidelines –II)	Practical demonstration of each experiment will be conducted in group or individual with the help of availability of suitable lab equipment's and infrastructure.

Evaluation Pattern

Sr. No.	Details of the Evaluation	Weightage
1.	Internal Practical Examination	15%
2.	Internal Continuous Assessment in the form of Practical and Attendance	15%
3.	University Examination	70%
4.	Minimum Passing Criteria :	

Course Outcomes: Having completed this course, student will be able to (As per Guidelines – III)	
1.	Differentiate animal and plant cells, Identify Internal structure of eukaryotic cells and Learn process of mitosis and meiosis
2.	About hands on training of Volumetric analysis
3.	Determine the percentage of metal ion using complexometric titration and synthesize the metal complexes.
4.	About improvement in practical skills of students.

Suggested References: Include reference material from where a student is expected to study the said content in APA style. Reference websites can also be included. (As per Guidelines – IV)

Sr. No.	Reference
1.	Biochemical methods: S. Sadasivam & A. Manickam
2.	Molecular Cloning: A Laboratory Manual: Joe Sambrook
3.	Mendham, J., Denney, R. C., Barnes, J. D., Thomas, M. J. K., *Vogel's textbook of quantitative chemical analysis*, 6th Edition.
4.	Pandey, O. P., Bajpai, D. N., Giri, S., *Practical Chemistry.*
5.	G. H. Jeffery, J. Bassett, J. Mendham, R. C. Denney, *Vogel's Textbook of Quantitative Chemical Analysis,* 5th Edition, ELBS Publication, (1996)

On-line resources available that can be used as reference material (As per Guidelines –V)

Sr.	On-line Resources

No.	
1.	http://mbvi-au.vlabs.ac.in/
2.	http://cbi-au.vlabs.ac.in
3.	Google books, INFLIBNET, Google Web
4.	http://www.olabs.edu.in/?pg=topMenu&id=41