BS Chemistry Semester-III					
Programme	**BS Chemistry**	**Course Code**	**Chem-276L**	**Credit Hours**	**1**
Course Title	**Introductory Biochemistry-Lab**		**Course Type**	**Major Elective**	

Course Introduction

To understand the Safety measures and laboratory ethics and use of basic instruments like pH meter, spectrophotometer and flame photometer. This course will be helpful practical for the formation of different solutions and dilution formation from stock solution.
Safety measures in bio-laboratory and laboratory working ethics. Preservation of animal and plant sample for experiments. Preparation of solutions routinely used in biochemical experiments (e.g., percent, ppm, normal, molar solutions). pH determination using various methods. Calibration of pH meter for the determination of pH. Preparation of buffers-PBS, Citrate buffer etc. Use of spectrophotometer & Flame photometer. Calibration of micropipette and its use. Washing and use of glassware's for biological experiments. Determination of Na, Ka, Li, Ca by flame photometer

Learning Outcomes

1. Students will be able to get knowledge about the biosafety measures and ethics about the biolaboratory
2. Students will learn different basic practical like solution formation and use of pH meter
3. Students will also learn the buffer formation, use of basic glassware, handling of apparatus, and flame photometer.

	Course Content	**Assignments/Readings**
Week 1	Laboratory ethics to use chemical, biological sample, working in the biological laboratory and basic instruments	Read from listed books
Week 2	Awareness about the preparation of the laboratory solution and pH determination	Class base learning/test
Week 3	Solution preparation (percentage and ppm) and its conversion, and its importance in laboratory	Class base learning/test
Week 4	Solution preparation (Molar and molal), dilutions from stock solution and its conversion, and its importance in laboratory	Class base learning/test
Week 5	Practice of solution formation	Class base learning/test
Week 6	Preservation of animal samples	Class base learning/test
Week 7	Discussion on	-
Week 8	Midterm Exams	-
Week 9	Measurement of pH of different sample by using different methods and their comparison	Class base learning/test
Week 10	Preparation of buffers-PBS, Citrate buffer etc	Class base learning/test
Week 11	Use of spectrophotometer & Flame photometer	Class base learning/test
Week 12	Assign the assignments to students and discussion	Class base learning/test

Week 13	Calibration of micropipette and its use	Class base learning/test
Week 14	Washing and use of glassware's for biological experiments	Class base learning/test
Week 15	Determination of Na, Ka, Li, Ca by flame photometer	Class base learning/test
Week 16	Final Term	-

Reading Material

1. Varley, H., Gowenlock, A. H., & Bell, P. G. (2022). *Practical clinical biochemistry* (8th ed.). CBS Publishers & Distributors.
2. Plummer, D. T. (2008). *An introduction to practical biochemistry* (3rd ed.). McGraw-Hill Education.
3. Gowenlock, A. H. (2009). *Varley's practical clinical biochemistry* (6th ed.). Arnold.
4. Williams, B. L., & Wilson, K. (2006). *Principles and techniques of practical biochemistry* (3rd ed.). Cambridge University Press.
5. Online literature as per direction of teacher

Teaching Learning Strategies

- Lecturing using white/black board/Multimedia
- Written Assignments/Quiz/Task/Presentation
- Discussion about practical
- Checking the results and discussion

Assignments: Types and Number with Calendar

Assignment, Quiz, Task, Presentation etc.

Assessment

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.