Institute of Zoology
Faculty of Life Sciences
University of the Punjab, Lahore
Course Outline

Programme	BS Zoology	**Course Code**	**ZOOL-304**	**Credit Hours**	1
Course Title	**Biochemistry-II (Lab)**				

Course Introduction

Biochemistry is the branch of science which deals with the chemistry of life that explores the chemical processes of the living organisms. It is a combination of biology, chemistry and molecular biology. The main focus of biochemistry is to understand that how biological molecules give rise to the processes which occur within living cells.

The course aims to:

1. To perform quantitative and qualitative analysis of macromolecules with interpretation of the results, which can also be used for the biochemical investigations of health-related problems.

Learning Outcomes

After successfully completion of this course, students should be able:

1. To use the basic laboratory apparatus and their maintenance.
2. To perform experiment independently by using protocols.
3. To explain the chemistry of the performed reactions and interpret, results of their laboratory experiments

Course Content		**Assignments/Readings**
Week 1	Basic laboratory apparatus and their maintenance To study the components of spectrophotometer and its use	
Week 2	Preparation of standard curve of proteins using Lowry's technique and estimation of unknown concentration of protein.	
Week 3	Preparation of standard curve of proteins using Lowry's technique and estimation of unknown concentration of protein.	
Week 4	Preparation of standard curve of protein by Biuret method and estimation of unknown concentration of protein.	
Week 5	Preparation of standard curve of lipid by vanilline reagent and estimation of unknown concentration of lipid.	
Week 6	Preparation of standard curve and estimation of DNA by colorimetric analysis using Diphenylamine method.	
Week 7	Preparation of standard curve and estimation of total RNA by colorimetric analysis using Orcinol method	
Week 8	Demonstration of differential solubility of lipids in various solvents.	
Week 9	Various qualitative tests for detection of lipids.	
Week 10	Various qualitative tests for detection of lipids.	
Week 11	Determination of acid value of fats.	
Week 12	Biochemical tests for detection of different amino acids.	

Week 13	Biochemical tests for detection of different amino acids	
Week 14	Separation and identification of various amino acids by paper chromatography.	
Week 15	Separation of proteins by thin layer chromatography	
Week 16	Separation of proteins by thin layer chromatography	

Textbooks and Reading Material

1. Plummer, David T., 1990. An Introduction to Practical Biochemistry, 4th Edition McGraw Hill Book Company, London.
2. Wilson, K and Walker, J., 1994. Practical Biochemistry: Principles and Techniques, 4th Edition, Cambridge University Press.
3. Alexander, R.R. and Griffiths, J.M. 1993. Basic biochemical methods. Wiley– Liss, New York.
4. Sawhney, S. K. and Singh, R., 2006. Introductory Practical Biochemistry, 2nd Edition, Narosa Publishing House.
5. Oser, B. L., (Latest Edition). Hawk's Physiological Chemistry, McGraw Hill Book Company**.**
6. David L. Nelson, and Michael M. Cox, 2005. Lehninger Principles of Biochemistry 4th Edition, Macmillan Worth Publishers, New York.
7. James R. Mckee; Trudy Meckee, . 6th Edition.Oxford University Press.

Additional Readings:

1. Lubert Stryer, 1995. Biochemistry, 4th Edition, W.H. Freeman & Company, New York.
2. Murray, R. K., Granner, D. K., Mayer, P. A. and Rodwells, V. W., 2000.
3. Harper's Biochemistry, McGraw Hill Bok Company, New York.
4. Elliott, W. H. and Elliot, D. C., 2002. Biochemistry and Molecular Biology, Oxford Medical Publications, Oxford University Press.
5. Voet, D., Voet, J. G. and Pratt, C. W., 1999. Biochemistry, John Wiley & Sons.
6. Zubay, G. 1993. Biochemistry, Wm. C. Brown Publishers, Oxford.

Teaching Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos/films will be shown on occasion.

Assignments: Types and Number with Calendar

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessment

As per University rules