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

Programme	BS Zoology	**Course Code**	**ZOOL-212**	**Credit Hours**	2
Course Title	**Lab. Biological Techniques**				

Course Introduction

The course aims to:
1. Develop scientific-technical expertise, culture and work habits.
2. Familiarize with the basic tools and techniques of scientific study with emphasis on biological sciences
3. Develop basic understanding of the equipment's usage
4. Develop the skills to collect and preserved animals

Learning Outcomes

After successfully completion of this course,
1. Students must be able to identify the instrument
2. Able to use instrument for identification, measurement, fixing and cutting of tissue
3. Able to apply a practical and research skill
4. Able to operate use the lab equipment efficiently.
5. Able to collect and preserved the specimen in dry and wet form.
6. Developed expertise in Preservation techniques

Course Content		**Assignments/Readings**
Week 1	Parts of bright field microscope and its function	De Robertis, 1987 Cheesbrough, 1998 Gallagher and Wiley, 2008 Jones et al., 1994 Class Lecture
	Cleanliness and Maintenance of microscope	
Week 2	How to use microscope	
	Preparation of slides (dry mount)	
Week 3	Preparation of slides (wet mount)	
	Observation of wet mounts of human cheek cells	
Week 4	Measurement of cell size	
	Parts of Electron microscopes and its function	
Week 5	Histology of tissue of any available animal	
	Histology of tissue of any available animal	
Week 6	Histology of tissue of any available animal	
	Hematoxylin and eosin staining	
Week 7	Study of tissue(s) using microscope	
	Study of tissue(s) using microscope	
Week 8	Gram's staining	
	Liquid handling: proper use of pipettes and micropittes	
Week 9	Use of weighing balance and pH meter	
	Preparation of stock solutions of various strengths	
Week 10	Preparation of stock solutions of various strengths	

	Handling of centrifuge machines	
Week 11	Paper Chromatography	
	Paper Chromatography	
Week 12	Thin layer chromatography of amino acids	
	Thin layer chromatography of amino acids	
Week 13	Parts of UV-VIS-Spectrophotometric and its functions	
	Spectrophotometric estimation of glucose	
Week 14	Collection and Preservation of animals representative animals of various phyla	
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Week 15	Collection and Preservation of animals representative animals of various phyla	
	Collection and Preservation of animals representative animals of various phyla	
Week 16	Collection and Preservation of animals representative animals of various phyla	
	Collection and Preservation of animals representative animals of various phyla	

Textbooks and Reading Material

1. Dean, J. R. 1999. Extraction Methods for Environmental Analysis. John Wiley and Sons Ltd. UK
2. Cheesbrough, M. 1998. District Laboratory Practice in TropicalCountries. Part I. Cambridge University Press, UK.
3. Cheesbrough, M. 1998. District Laboratory Practice in TropicalCountries. Part II. Cambridge University Press, UK.
4. Curos, M. 1997.Environmental Sampling and Analysis: Lab Manual. CRC Press LLC. USA.
5. Curos, M. 1997.Environmental Sampling and Analysis: ForTechnician. CRC Press LLC. USA.
6. Slingsby, D., Cock, C.1986. Practical Ecology. McMillan Education Ltd. London.
7. Rob Reed/ David HOLMES, Jonathan Weyers/ Allan Jones Pearson, Practical skill in bio-molecular sciences.
8. Gallagher, S.R. and Wiley E.A. 2008. Current protocols essential laboratory Techniques. John Wiley & Sons Inc, USA.
9. Jones, A. Reed, R and Weyers, J. 1994. Practical skills in Biology. Longman Singapore Publishers (Pte) Ltd.
10. De Robertis, E. D. P., De Robertis Jr. E. N. F. 1987. Cell and Molecular Biology, Lea & Febiger, New York.

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