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

Course Outline

Programme	BS Zoology	**Course Code**	**ZOOL-103**	**Credit Hours**	2
Course Title	**Cell Biology**				

Course Introduction

This course introduces cell structure and the function of prokaryotes and eukaryotes.
The objectives of the course are:-
1. To explain the basic concepts of cell biology.
2. To understand cellular structure, composition of the organelles, cell growth and cell division.
3. To explain how macromolecules and organelles govern the dynamic organization, function of living cells.

Learning Outcomes

On the completion of the course, the students will:
1. **ACQUIRE** the basic concepts of cell biology.
2. **UNDERSTAND** the metabolic structure and functional processes of cells in terms of cellular organelles, membranes, and biological molecules.
3. **ABILITY** to understand the role of macromolecules regulating cellular processes.
4. **FORMULATE** the critical thinking skills and knowledge on cell.

	Course Content	**Assignments/Readings**
Week 1	Unit-I: • Introduction to cell structure and function • Cell theory	
Week 2	Unit II • Comparison of plant and animal cells • Comparison of prokaryotic and eukaryotic cells	
Week 3	Unit-III: • Cell membrane • Structural models • Chemical composition and function	Study the Experimental Pathway "The Origin of Eukaryotic Cells" Page 27
Week 4	Unit-IV: • Cellular transport • Diffusion and osmosis • Facilitated and active transport • Endocytosis and exocytosis	
Week 5	Unit-V: • Cell Organelles (structure and function) • Endoplasmic reticulum	
Week 6	Unit-VI: • Golgi Bodies	
Week 7	Unit-VII: • Mitochondria	THE HUMAN PERSPECTIVE: The Role of Anaerobic and Aerobic Metabolism in Exercise Page 394
Week 8	Unit-VIII: • Lysosomes	THE HUMAN PERSPECTIVE: Disorders Resulting from Defects in

		Lysosomal Function Page 508
Week 9	Unit-IX: • Peroxisomes • Ribosome	
Week 10	Unit-X: • Nucleus • Structure and function	
Week 11	• Nuclear membrane and Chromatin	
Week 12	Unit XI • Cytoskeleton • Microtubules • Structure and types • Function of MT	
Week 13	• Intermediate Filament • Structure and types • Function of IFs • Microfilaments Structure and types • Function of MT	
Week 14	Unit XII: • Cellular reproduction • Cell cycle	THE HUMAN PERSPECTIVE: Meiotic Nondisjunction and Its Consequences 615
Week 15	• Mitosis and Stages	
Week 16	• Meiosis and Stages	

Textbooks and Reading Material

Textbooks.

1. Karp G, Iwasa J, Marshall W. Karp's Cell Biology, Global Edition. John Wiley & Sons; 2018.

Suggested Readings

2. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K., Watson, J. D. 2017. Molecular Biology of the Cell. 6th Edition. Garland Publishing Inc., New York.
3. Lodish H., Berk A., Kaiser C., Krieger M., Bretscher A., Ploegh H., Martin K., Yaffe M., Amon A. 2021. Molecular Cell Biology. W. H. Freeman; 9th ed. edition (Jan. 27, 2021) 978-1319208523
4. Articles in Journal of Cell Biology ISSN: 0021-9525
5. Bain B.J., Bates I., Laffan M.A. 2016. Dacie and Lewis Practical Haematology. 12th Edition. ISBN: 9780702069307. Elsevier

Teaching Learning Strategies

1. Use of Technology resources.
2. Use of Google Classroom management and Tools Resources
3. Provision of Handouts
4. Demonstration of the concepts using animations of cellular processes
5. Group activity of the students for problem solving skills

Assignments: Types and Number with Calendar

1. Assignment 1: Due by Midterm Examination
2. Lab Manual/Notebook: Due before the week of Final Term Examination

Assessment

As per University rules