

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF ZOOLOGY**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
<b>Program: Bachelor in Life Science</b> <i>(Certificate / Diploma / Degree / Honors)</i>		<b>Semester - II</b>	<b>Session: 2024-2025</b>
1	<b>Course Code</b>	<b>ZOGE - 02T</b>	
2	<b>Course Title</b>	<b>Cell Biology and Histology</b>	
3	<b>Course Type</b>	<b>General Elective</b>	
4	<b>Pre-requisite (if, any)</b>	<i>As per Program</i>	
5	<b>Course Learning Outcomes (CLO)</b>	After successfully completing this course, the students will be able to- > Acquire knowledge of Cell membrane and function > Understand the functioning of nucleus and extra nuclear organelles and understand the intricate cellular mechanisms involved. > Gain Knowledge of key processes like cell division, > Learn about various tissues of body their structural significance	
6	<b>Credit Value</b>	<b>3 Credits</b>	<i>Credit = 15 Hours - learning &amp; Observation</i>
7	<b>Total Marks</b>	<b>Max. Marks: 100</b>	<b>Min Passing Marks: 40</b>
<b>PART -B: Content of the Course</b>			
<b>Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)</b>			
<b>Unit</b>	<b>Topics (Course contents)</b>		<b>No. of Period</b>
<b>I</b>	<b>Cell Structure, Cell Membrane and Extra Nuclear Cell Organelles:</b> General structure of Prokaryotes and Eukaryotes. <b>Cell membrane organization:</b> Origin, structure (Lipid-Lipid Bilayer Model, Dannelli & Davson Model, Unit Membrane Model and Fluid mosaic model), chemical composition and function of cell membrane, Specialization of cell membrane: microvilli desmosomes, Hemidesmosome, Septate Desmosome, plasmodesmata, tight and gap junction. <b>Extra Nuclear Cell Organelles:</b> Ultra structure and functions of Endoplasmic reticulum and Golgi apparatus.		<b>11</b>
<b>II</b>	<b>Extra Nuclear Cell Organelles:</b> Ultra structure and functions of Ribosome, Lysosome, Peroxisomes, Mitochondria: Origin, structure and function.		<b>11</b>
<b>III</b>	<b>Nuclear Organization and Cell Division:</b> Size, shape, structure and functions of interphase nucleus. Ultra structure of nuclear membrane and pore complex. Nucleolus: general organization, chemical composition and functions, Chromosome Morphology, Cell cycle, Cell division- Mitosis and Meiosis. Cell division checks points and their regulation. Programmed cell death (Apoptosis).		<b>12</b>
<b>IV</b>	<b>Introduction to tissues.</b> Epithelial tissue: types, structure and characteristics. surface modifications. Basement membrane: structure and characteristics. Connective tissue cells. Structure and function of loose, dense and adipose tissue. Cartilage and bone: classification, and fine structure. Blood: plasma, blood cells, lymph- their structure and function. Bone marrow and haemopoiesis. Structure and function of spleen. Muscular tissue: ultrastructure of smooth, skeletal and cardiac muscles. Muscle-tendon attachment. Structure and classification of neurons.		<b>11</b>
<b>Keywords</b>	<i>Cell Biology, Cell Membrane, Cell organelle, Nucleus, endoplasmic reticulum and Golgi apparatus, ribosome, lysosome, peroxisomes, Mitochondria, tissues.</i>		
<b>Name and Signature of Convener &amp; Members of CBoS:</b>			

## PART-C: Learning Resources

### Text Books, Reference Books and Others

#### Text Books Recommended –

1. Gupta P.K. Cell and Molecular Biology, Himalaya Publication
2. Arumugam.N, Cell biology and Molecular Biology, Saras Publication
3. Rastogi V.B. Cell Biology, Rastogi Publication
4. Verma P.S. and Agrawal Cell Biology, S. Chand Publication

#### Reference Books Recommended –

5. Karp, G. (2010) Cell and Molecular Biology: Concepts and Experiments (6th edition) John Wiley & Sons. Inc.
6. De Robertis, E.D.P. and De Robertis, E.M.F. (2006) Cell and Molecular Biology (8th edition) Lippincott Williams and Wilkins, Philadelphia.
7. Cooper, G.M. and Hausman, R.E. (2009) The Cell: A Molecular Approach. (5th edition) ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.
8. Becker, W.M.; Kleinsmith, L.J.; Hardin. J. and Bertoni, G. P. (2009) The World of the Cell. (7th edition) Pearson Benjamin Cummings Publishing, San Francisco. Practical

#### Online Resources–

1. National digital Library.-  
<http://ndl.iitkgp.ac.in/document/Qkh4R2FGUkRNZjFicFUvWmpzQ2loY0poaUVtYIByc1BZNXk3TnZMWVfzQXpZNjhhQUplR1BTOERHelZXZUp5Nw>
2. <http://ndl.iitkgp.ac.in/document/Qkh4R2FGUkRNZjFicFUvWmpzQ2loZFJyVGFmaDFwbXpBS0kwNi9tbi91UGYxaFI6OC9Sb25QWUIXLzF1V3NUZw>
3. <https://www.youtube.com/watch?v=GYy627IeAKg>
4. E-PG Pathshala.  
<https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=2rAs1Puvga4LW93zMe83aA==>

## PART -D: Assessment and Evaluation

### Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

<b>Continuous Internal Assessment (CIA):</b> (By Course Teacher)	Internal Test / Quiz-(2): 20 +20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10	
	Total Marks - 30	
<b>End Semester Exam (ESE):</b>	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit-4x10=40 Marks	

Name and Signature of Convener & Members of CBoS:



