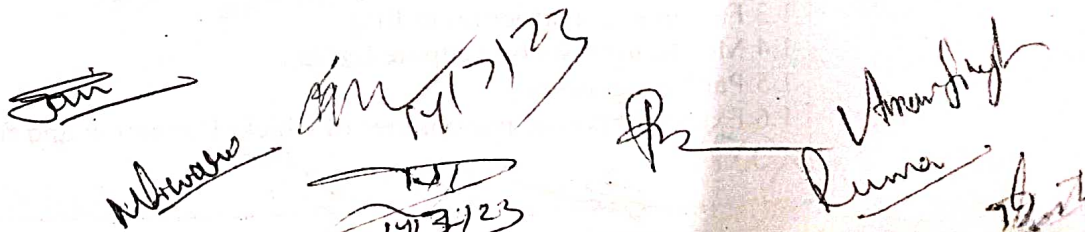


St. Aloysius College (Autonomous), Jabalpur
Department of Higher Education, Govt. of M.P.
Under Graduate Syllabus for B.Sc. (Bio)
As recommended by Central board of Studies in Zoology
Class - B.Sc. II Semester
(Session 2023-24)

Theory Syllabus			
Part A Introduction			
Programme- Certificate Course	Class: B.Sc	Sem -II Semester	Session: 2023- 2024
Subject: Zoology			
1.	Course Code	S1-ZOOL2T	
	Course Title	Cell Biology, Reproductive Biology and Developmental Biology	
	Course Type (Core Course/Elective/Generic Elective/Vocational..)	Core Course – Elective (Zoology)	
	Pre-requisite (if any)	To study this course a student must have had the subject Biology in 12 th Class	
	Course Learning outcomes (CLO)	<p>Upon completion of the course students should be able to</p> <ol style="list-style-type: none"> 1. Develop deeper understanding of what life is and how it functions at cellular level 2. Understand the nature and basic concepts of Cell biology, Reproductive and Developmental biology. 3. Understand structure and functions of cell membrane and cellular organelles 4. Understand the importance of latest reproductive trends, reproductive techniques to be applied for human welfare. 5. Understand the general patterns and sequential developmental stages during embryogenesis; and understand how the developmental processes lead to establishment of body plan of multi-cellular organisms. 6. Understand about the evolutionary development of various animals. 	
6	Credit Value	3	
7	Total Marks	MM 60+40	Min Passing Marks 35



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Part B Content of the course

**Total No. of Lectures – Tutorials- Practical (in hours per week): 2hours per week
L-T-P:**

Unit I	Topics	No. of Lectures
I	Cell Biology <p>1.1 Concept of Prokaryotic and Eukaryotic Cells, difference between Prokaryotic and Eukaryotic Cells 1.2 Structure and functions of Plasma membrane 1.3 Structure and functions of Golgi body, Mitochondria, Endoplasmic reticulum, Ribosome and Lysosome 1.4 Structure and functions of Nucleus 1.5 Structure and functions of Chromosome and special type of chromosomes-Lamp brush and Polytene chromosome 1.6 Cell cycle, Mitotic and Meiotic cell division and their significance</p> <p>Keywords/Tags: Prokaryote, Eukaryote, Cell organelles, Chromosomes, Cell Cycle</p>	13
II	Reproductive Biology <p>1.1 Structure of Male reproductive system of Lepus 1.2 Structure of Female reproductive system of Lepus 1.3 Histology of Testis, and Ovary of Lepus 1.4 Gametogenesis - Spermatogenesis and oogenesis, difference between spermatogenesis and oogenesis 1.5 Types of Eggs-based on amount and distribution of yolk with examples</p> <p>Keywords/Tags: Reproductive system, Gametogenesis, Sperms, Eggs</p>	12
III	Recent Assisted Reproductive Techniques (ART) <p>1.1 Stem Cell-Types and their uses 1.2 Gene bank, Sperm bank, Superovulation, Cryopreservation 1.3 In Vitro Fertilization (IVF) and Embryo Transfer (ET)), Zygote Intra Fallopian Transfer (ZIFT), Intracytoplasmic Sperm Injection (ICSI). MOET (Multiple ovulation embryo transfer) 1.4 Placentation -Types, examples and functions 1.5 Placenta Banking-Placenta preservation benefits</p> <p>Keywords/Tags: Gene bank, Sperm bank, Superovulation, IVF, ET, ZIFT, ICSI, Placenta banking</p>	10
IV	Developmental Biology <p>1.1 Fertilization: Process of fertilization 1.2 Embryonic development of frog up to the formation of three germinal layers 1.3 Fate map construction in frog. 1.4 Metamorphosis of Tadpole Larva 1.5 Parthenogenesis 1.6 Extraembryonic membranes of Chick: Formation and functions.</p>	10

Keywords/Tags: Fertilization, Frog embryology. Tadpole metamorphosis. Parthenogenesis

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested readings

1. Suggested readings:

1. Armugam. "A Text Book of Embryology". Saras Publication, 2005.
2. Balinsky. BI. "An Introduction to Embryology", Cengage Learning, 2012.
3. De Robertis. EDP. De Robertis, EMF, "Cell and Molecular Biology", Eighth edition, Lippincott, Williams & Wilkins, Philadelphia, 2006.
4. Gupta, PK. "Cell Biology, Genetics and Evolution", Rastogi
5. Haffner, L. "Human reproduction at a glance", BWL Publication, "Human Embryology", Publications, 2013.
6. Churchill Livingstone, 2001.
7. Powar, CB, "Cell Biology", Himalaya Publishing House, 2010.
8. Larsen, 8. Rastogi, VB, "Introduction to Cytology", KNRN Publication, 1988.
9. Rastogi, VB. "Animal Distribution and Developmental Biology", KNE 2001. Publication, 2020.
10. Sastry, KV. Publications, 2018. "Endocrinology and Reproductive Biology",
11. Verma and Agarwal. "A Text Book of Cytology", S. Chand & Co., 1999.
12. Verma, PS. Agarwal, V. K. "Chordate Embryology", S. Chand & Co., 2000
13. Pardesi, K and Dubey, A., "Cell and Developmental Biology", Akhandpubli house, New Delhi, India edition, 2020.

14/7/23

Mukherjee

14/7/23

Amritha

Ruma

Shruti

Part B- Content of the Course		
Total No. of Lectures - Tutorials-Practical (in hours per week): 02 hours per week		
L-T-P:		
Unit	Topics	No. of lectures
1.	Spotting related to the cytology a. Prokaryote and Eukaryote Cell b. Stages of Mitotic cell division c. Stages of Meiotic cell division. d. Lamp brush Chromosome and Polytene Chromosome under Phase Contrast Microscope.	15
2.	Spotting related to Reproductive Biology and Embryology a. T.S. Testis of Mammal b. T.S. Ovary of Mammal c. Developmental stages of Frog embryology d. Developmental stages of Chick embryology	
3.	Squash preparation of onion root tip to understand the stages of Mitosis	
4.	Squash preparation of Grasshopper testis to understand the stages of Meiosis	
Keywords/Tags: Stages of cell division, Stages of Embryonic development, Squash Preparation		

Part - Assessment and Evaluation

Suggested continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction/Quiz	10	Viva Voce on Practical	10
Attendance	10	Practical Record File	10
Assignments (Charts/Model/ Seminar/Rural Service/Technology Dissemination/ Report of Excursion/lab Visits/Survey/Industrial visit	20	Table Work/Experiments	40
		1. Spotting of Cytology	10
		2. Spotting of Reproductive Biology & Embryology	10
		3. Squash Preparation of onion root tip	10
		4. Squash preparation of Grasshopper testis	10
TOTAL	40		60

Credit

1

Any Remarks/Suggestion:

Signature
17/12/23

Signature
17/12/23

Signature

Signature
17/12/23