

Part A: Introduction			
Program: Certificate Course		Class: B.Sc. II Year	Year: 2023 Session: 2023-2024
1	Course Code	ZOOL-2P	
2	Course Title	Lab Course - 2	
3	Course Type	Practical	
4	Pre-requisite (if any)	No	
5	Course Learning Outcomes (CLO)	<p>After completion of practical work the outcome will be :</p> <ul style="list-style-type: none"> • Able to understand and explain Mendel's Law of Inheritance • Capable to analyze inheritance of gene by pedigree analysis. • Able to know laboratory culture of Drosophila. • Able to understand cytological, histological and osteological configuration for animal life. • Capable to understand Human karyotype and Numerical alteration in chromosomes • Capable to explain Evolution and evidences • Capable of performing tests for identification of biological macromolecules • Able to estimate nucleic acids and Isolation of DNA 	
6	Credit Value	2	
7	Total Marks	Max. Marks: 50	Min Passing Marks : 17


13.6.2022


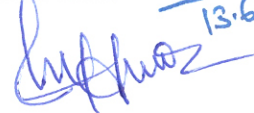
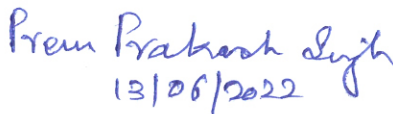
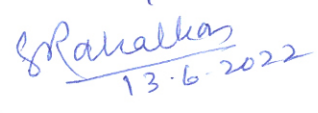

Part B		
Total No. of Lecturer (one hour per week)		
Total Periods: 30		
	Contents	No. of period
	Tentative list of practical/exercise: <ol style="list-style-type: none"> 1. Application of probability in the law of segregation with coin tossing. 2. Study of mode of inheritance of the following traits by pedigree charts – attached ear lobe, widow's peak. 3. Familiarization with techniques of handling <i>Drosophila</i>, identifying males and females; observing wild type and mutant (white eye, wing less) flies, and setting up cultures. 4. Study of human karyotypes and numerical alterations (Down syndrome, Klinefelter syndrome and Turner syndrome). 5. Types of eggs based on quantity and distribution of yolk: sea urchin, insect, frog, Chick. 6. Comparative study of cleavage patterns in Frog and Amphioxus models. 7. How do cells move, change shape and size during morphogenetic movement of Blastulation, Gastrulation in Frog, Amphioxus, Chick 8. Study of development of chick embryo through incubated chick eggs up to 96 h. 9. Extra embryonic membranes of chick through permanent slides. 10. Some videos to develop understanding on the process of development. 11. Study of adaptive radiations in feet of birds and mouth parts of insects. 12. Understanding embryological evidence of evolution (through charts and videos). 13. Study of types of fossils. 14. Analogy and homology (wings of birds and insects, forelimbs of bat and rabbit). 15. Preparation of models of amino acids and dipeptides. 16. Ninhydrin test for α-amino acids. 17. Determination of pK and pI values of glycine. 18. Benedict's test for reducing sugars. 19. Iodine test for starch. 20. Determination of acid value of oil 21. Preparation of ball and stick model for B-DNA molecule (A=T and G=C base pairs). 22. Estimation of DNA by DPA method. 23. Estimation of RNA by Orcinol method. 24. Isolation of genomic DNA by ethanol precipitation method. 	30
Keywords: Genetics, Mendel's law, Interaction of Gene, Embryology, Regeneration, Evolution.		

Part C - Learning Resource
Text Books, Reference Books, Other Resources
Suggested Readings: Text Books: <ol style="list-style-type: none"> 1. Practical Hand Book of Genetics: Vikas Pali Kalyani Publication 3. Essential Practical Handbook of Cell Biology & Genetics, Biometry & Microbiology, A Laboratory Manual Debarati Das, Academic Publishers. 4. Cytogenetics: Mohan P Arora, Himalayan Publishing House 5. Modern Experimental Biochemistry by Rodney F. Boyer 6. Molecular Cloning: A Laboratory Manual by Joe Sambrook 7. Practical Manual for Biochemistry : By GG Kaushik, CBS Publication E-Resources: <ol style="list-style-type: none"> 1. https://onlinecourses.nptel.ac.in/noc22_cy32/preview 2. https://www.classcentral.com/course/swayam-experimental-biochemistry-12909 3. https://jru.edu.in/studentcorner/lab-manual/bpharm/Lab%20Manual%20-%20Biochemistry.pdf 4. Fundamentals of Genetics.pdf (jru.edu.in)

Part D: Assessment and Evaluation
Practical Exam(UE): Maximum Marks: 50 Marks

DECLARATION

This is to certify that the syllabus is framed by the central board of study (Zoology) as per the guidelines of the department of higher education, Chhattisgarh government.

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|--|---|----------|---|---|
| 1. Dr. K. R. Sahu | - | Chairman | - | |
| Assistant Professor, Govt. Pandit Madhav Rao Sapre Collge, Pendra Road | | | | 
13.6.2022 |
| 2. Dr. Ajit Hundet | - | Member | - | |
| Professor, Govt. D. B. Girls College, Raipur | | | |  |
| 3. Dr. Prem Prakash Singh | - | Member | - | |
| Professor, Govt. College, Kusmi, Balrampur | | | | 
13/06/2022 |
| 4. Dr. Shubhada Rahalkar | - | Member | - | |
| Professor, Govt. Bilasa Girls P. G. College, Bilaspur | | | | 
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| 5. Dr. Anil Kumar Shrivastava | - | Member | - | |
| Professor, Govt. V. Y. T. P. G. Autonomous College, Durg | | | |  |

6. Dr. R. K. Tamboli - Member -
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Sumedh
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9. Dr. L. P. Miri - Member -
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10. Dr. Rajesh Kumar Rai - Member -
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Hema
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Date: 13.06.2022.