



**PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE**

Autonomous

Siddhartha Nagar, Vijayawada-520010

Re-accredited at 'A+' by the NAAC

23ZOMAP122: CELL & MOLECULAR BIOLOGY LAB

Offered to: BSc.Honours (Zoology). **SEMESTER: II**

Credits: 1

Course Type: Major 4 (P)

60Hrs

Year of Introduction: 2023 -2024

LEARNING OBJECTIVES

- | Acquainting and skill enhancement in the usage of laboratory microscope
- | Hands-on experience of different phases of cell division by experimentation
- | Develop skills on human karyotyping and identification of chromosomal disorders
- | To apply the basic concept of inheritance for applied research
- | To get familiar with phylogeny and geological history of origin & evolution of animals

CO1. Students will demonstrate a comprehensive understanding of prokaryotic and eukaryotic cell structures, functions, and processes and membrane-bound organelles.

CO2. Understanding of the structure and function of major cell organelles, including the endoplasmic reticulum, Golgi apparatus, mitochondria, and lysosomes.

CO3. Understanding of the mechanisms and regulation of cell division, including mitosis and meiosis and bioenergetics, exploring the pathways involved in cellular energy production, such as glycolysis, Krebs cycle and ETS.

CO4. Understanding of molecular biology principles, including the structure and function of DNA, RNA, and proteins, translation of molecular mechanisms of protein synthesis from mRNA templates.

CO5. Understanding of the structure, function, and classifications of major biomolecules, including proteins, nucleic acids, lipids, and carbohydrates.

CO-PO MATRIX							
CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1					H		
CO2					H		
CO3					H		
CO4					H		
CO5					H		

SYLLABUS:

1. Preparation of temporary slides of Mitotic divisions with onion root tips
2. Observation of various stages of Mitosis with prepared slides
3. Observation of various stages of Meiosis with prepared slides
4. Mounting of salivary gland chromosomes of Chironomus
5. Test for carbohydrate in given biological sample (Benedicts test)

6. Test for Protein in given biological sample (Nitric acid test -white ring)
7. Test for lipid in the given biological sample (Saponification test)

REFERENCE WEB LINKS:

- | <https://cbi-au.vlabs.ac.in/>
- | <https://www.youtube.com/watch?v=xhnUZAYNdQk>
- | https://www.youtube.com/watch?v=l8LXQq5_VL0
- | <https://www.labster.com/simulations>
- | <https://www.sciencecourseware.org/BiologyLabsOnline/protected/TranslationLab/index.php>
- | <https://virtual-labs.github.io/exp-analysis-of-carbohydrates-au/procedure.html>
- | https://www.labxchange.org/library/items/lb:LabXchange:f10fd7ad:lx_simulation:1
- | <http://www.zoologyresources.com/uploadfiles/books/dc64b77d8769325515d17c945e461b45.pdf>

(I) Semester End Examination Model Paper 35M

1. Preparation of temporary slides of mitotic division of onion root tip . 10M.
2. Estimate the total Carbohydrates present in the given sample . 8M
3. Identify and draw a neat labeled diagram and comment upon 4 x 3 =12M
 - A. Prophase
 - B. Metaphase
 - C. Anaphase
 - D. Telophase
4. Record + Viva-voce 5M

(II) Continuous Assessment (Internal) 15M

TOTAL 50M