PRACTICAL -II

CELL AND MOLECULAR BIOLOGY, GENETICS, BIOTECHNOLOGY AND BIOINFORMATICS

Semester	Subject Code	Category	Practical		Theory	Practical	Credits
			Hrs/ week	Total Hours/ Semester			
II	21CPZO22	Core Practical-II	4	60	Nil	60	4

COURSE OBJECTIVES

- To measure using ocular and stage micrometers of cell from any prepared slide.
- To understand the culture of Drosophila, Sex identification. Identification of blood groups A,B, ABO and Rh
- To observe the demonstration of principle and application of Tissue culture techniques.
- To understand and interpretation of Biological data bases.

CELL AND MOLECULAR BIOLOGY **20 Hours**

CYTOLOGICAL TECHNIQUES

Micrometry – measurements using ocular and stage micrometers – measurements of cell from any prepared slide.

Vital staining – Buccal smear stained with Methylene blue.

CHROMOSOME

Chromosome preparation – procedure. Preparation of meiotic chromosomes from any fish – (demonstration)

MOLECULAR BIOLOGY TECHNIQUES (Demonstration only)

Centrifuge, Isolation of DNA from Liver – Isolation of RNA – Denaturation of DNA – measurement of spectrophotometry – Isolation and analysis of proteins –electrophoresis.

GENETICS **20 Hours**

Preparation of culture medium Culture of Drosophila. Methods of maintenance. Sex identification. Identification of four mutants.

1. Identification of blood groups A,B, ABO and Rh.
2. Mounting of salivary glands of Drosophila larva or Chironomus larva. Analysis of banding pattern

3. Karyotyping using human metaphase chromosome plates (Giemsa stained). Eye Karyotyping, Identification of syndromes (Down, Klinefelter and Turner) from Karyotype Photographs showing clinical features of each syndrome case.

BIOTECHNOLOGY **10 Hours**

Visit to Biotechnology Lab. to observe the demonstration of principle and applications of

1. Tissue culture.
2. Titration and preparation of virulent phage.
3. Isolation of DNA from the plasmids.
4. Restriction enzymes digestion of DNA.
5. DNA electrophoresis in Agarose gel.
6. PCR

Necessary books may be referred to learn the techniques and to be recorded in the record Note books. Observation of photographs of different instruments used in Biotechnology, their principles and applications.

BIOINFORMATICS **10 Hours**

1. BIOLOGICAL DATA BASES

a) Nucleotide sequence data base

b) Protein sequence data base

c) Structural data bases (NDB, PDB).

2. SEQUENCE ANALYSIS

a) Pairwise sequence alignment

b) Multiple sequence alignment

c) Similarity search

d) File format conversion

3. PROTEIN STRUCTURE PREDICTION

Primary structureprediction

Secondary structureprediction

Tertiary structureprediction & Function prediction