

IV Semester B.Sc. Degree (SEP Scheme) BIOTECHNOLOGY

Program Name	B. Sc Biotechnology	Semester	Fourth
Course Title	Bioinformatics		
Course No.	BT -Skill –1	Practical	No. of Credits 02
Contact hours	64 hrs	Duration of Exam	3 Hours
Formative Assessment Marks	10	Summative Assessment Marks	40

The course provides a comprehensive introduction to bioinformatics with a focus on applications in the life sciences. It covers the fundamentals of biological databases, sequence analysis, molecular phylogenetics, protein structure analysis, ADMET (Absorption, Distribution, Metabolism, Excretion, and Toxicity) profiling, target prediction, and primer design. The curriculum emphasizes hands-on, experimental learning through structured computer-based exercises.

Key practical components include:

- Retrieval of nucleotide and protein sequences from public databases (e.g., GenBank, UniProt).
- Sequence similarity searches using BLAST.
- Multiple sequence alignment and phylogenetic tree construction.
- Protein structure visualization and analysis using freely available tools.
- Computational ADMET property prediction for drug discovery.
- Drug–disease target prediction using bioinformatics approaches.
- Primer design for PCR and related applications.
- Interpretation of bioinformatics outputs.

By integrating theoretical foundations with practical exercises, the course builds a strong base in bioinformatics concepts and equips learners with essential computational skills for modern biological research.