

DEPARTMENT OF BIOTECHNOLOGY AND GENETICS

Value-Added Program (VAP): Bioinformatics and Genomics for Biologists

“Bioinformatics and Genomics for Biologists”- Syllabus (30 hours)

1. Introduction to Bioinformatics and its Scope: Provide an overview of bioinformatics activities, emphasizing the types of information in modern biology
2. Sequence retrieval: Explore databases for retrieving gene, mRNA, and protein sequences.
3. Sequence Analysis: Emphasize the significance of sequence analysis. Cover common methods and techniques in sequence analysis and alignment, including fundamental concepts like sequence similarity, identity, and homology—theory and demonstrations with hands-on exercises of BLAST and Multiple Sequence Alignment (MSA).
4. Genomics, and Transcriptomics: Examine the Human Genome Project, tracing the evolution of technology and its impact on major research models. Sanger Sequencing.
5. Introduction to Next-Generation Sequencing technology (NGS) and Microarray technology. Demo and hands-on of SRA and GEO databases.
6. An overview of transcriptomics and proteomics: Protein Data Bank (PDB), UniProt, Protein-protein interaction -STRING.