Introduction to Bioinformatics: The central dogma of biology: DNA, RNA,

Sequence alignment: Genomic sequences, Scoring matrices. Pairwise alignment.

Online databases: BLAST, Advanced BLAST,

Molecular phylogeny: Sequence alignment with dot matrix, Alignment visualization, Optimal alignment using dynamic programming method, Analyzing and sequencing nucleic acids,

Structure and hierarchy of proteins: Principles of protein structure, protein secondary structure prediction, Protein tertiary structure prediction,

Introduction to phylogenetics: drawing tree diagrams, tree building methods, Constructing

phylogenetics tree: Stepwise clustering, Fitch Margoliash method, Maximum parsimony and maximum likelihood method, Ancestral studies using phylogeny,

DNA replication: transcription, translation, Multiple sequence alignment,

DNA digital data storage: DNA-based Archival Storage System. Human

variation and disease: Sequence variation, phenologs, comparative genomics, and Personalized medicine.