Syllabus for Biotechnology background candidates

Syllabus for Mol Biol

Molecular biology	Cell as basic unit of life, prokaryotic and eukaryotic cells, organelles, compartmentalization, and their function; Cell division. DNA replication, Outline of replication machinery, initiation, maintainance and termination of replication. Transcription, Structure and function of a gene, Outline of transcription machinery Transcriptional initiation, elongation, and termination. Translation, Overview of translation machinery, translation initiation, elongation, and termination. Regulation of Gene Expression, operon, activators, repressors, hormones and signaling factors, epigenetic modification. Post-transcriptional Processing, Transcription attenuation, RNA editing and RNAi. Post-translational Processing, Codon usage and codon bias, Protein folding and molecular chaperons, Protein processing, Protein degradation DNA Damage, DNA Repair, and Origin of Mutation; Cell Signalling and signal transduction, Signalling receptors;

Syllabus for genetics:

Genetics	Basic Concepts of Genetics: Transmission Genetics (Mendelian Theory and its extension, sex linked inheritance, Quantitative traits), Molecular Genetics (Eukaryotic chromatin structure and chromosome organization, cell division, Eukaryotic genomes, Gene mutation), Human Molecular Genetics and Genetic disorder, Population and Evolutionary Genetics

---

Syllabus for Computational Biology / bioinformatics background candidates

Bioinformatics	Bioinformatics: Overview, history, and significance. Biological Databases: Accessing and querying biological data. Sequence Analysis: Pairwise and multiple sequence alignment, sequence similarity searching. Molecular Evolution: Phylogenetic analysis, evolutionary models. Structural Bioinformatics: Protein structure prediction, molecular modeling. Genomics: Genome assembly, gene prediction, genome annotation. Proteomics: Protein identification, characterization, and quantification. Bioinformatics in Drug discovery, personalized medicine, systems biology. Basic Statistical understanding.

Qs Pattern: Subjective