

Curriculum plan (Odd Semester 2025-2026)

Teacher Name: **Dr. Shanuja Beri**

Paper name: Cell and Molecular Biology (Practical) DSC

Class type: B. Sc. (H) III year

Paper shared with: Dr. Neeti Pandey

Date	Practical
August	• Requirement of a Tissue culture laboratory, its equipment and its layout. • Concept of cell culture and cell lines; Media preparation for mammalian tissue culture
September	• Inoculation and culture of E. coli in liquid culture medium (LB) • Preparation of solid culture medium (LB) and growth of E. coli by spreading and streaking.
October	• Estimation of the growth kinetics of E. coli from the data provided. • Preparation of permanent slides of mitosis/meiosis*. • Study of Polytene chromosomes from Chironomous/Drosophila larva
November	• Quantitative estimation of salmon sperm/calf thymus DNA using colorimeter.(DPA) or spectrophotometer (A260 measurement). • Study and interpretation of electron micrographs/photographs showing: DNA replication, Transcription, and Split genes. • Educational Trip

Curriculum plan (Odd Semester 2024-2025)

Teacher Name: **Dr. Shanuja Beri**

Paper name: Cell and Molecular Biology (Theory) DSC

Class type: B. Sc. (H) III year

Paper shared with: NIL

Date	Unit	Tests/Assignments/
August	UNIT-3: DNA and its Replication DNA replication in prokaryotes and eukaryotes-replication machinery and mechanisms, semi-conservative, bidirectional and semi-discontinuous replication, Replication of circular and linear double stranded DNA, Replication of telomeres	Assignments
September	UNIT 4: Transcription 5 hrs Machinery and mechanism of transcription in prokaryotes and eukaryotes-RNA polymerases, Transcription unit, Transcription factors, Synthesis of rRNA. UNIT 6: Post Transcriptional Modifications Split genes: concept of introns and exons, splicing mechanism, alternative splicing, and RNA editing	Assignments Revision
October	UNIT 5: Translation 5 hrs Genetic code, Process of protein synthesis in prokaryotes: fidelity of protein synthesis, aminoacyl-tRNA synthetases and charging of tRNA; Proteins involved in initiation, elongation and termination of polypeptide chain; Difference between prokaryotic and eukaryotic translation. UNIT 7: Gene Regulation Transcription regulation in prokaryotes: Lac operon; Overview of transcription regulation in eukaryotes: Activators, repressors, enhancers, silencer elements.	Assignments Revision Test
November	UNIT- 1: Cell Signalling 3 hrs Introduction to cell signalling pathways GPCR, cAMP, PKA, CREB, target gene and a nuclear receptor pathway UNIT-2: Cell Death and Cell Renewal 4 hrs Apoptosis vs. necrosis; intrinsic and extrinsic pathways of programmed cell death; stem cells and maintenance of adult tissues; embryonic and induced pluripotent stem cells	Revision Test

