**PG. GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Odd Semester (UG 1st Year)**

**Session (2021-2022)**

**Class: B.Sc. Bio-info. Elective 1st Semester Name of the Teacher: SUMIT DABHI**

**Subject: Cell Biology & Biochemistry Period: 2nd Lecture (THU-SAT)**

**Paper: I Room No: 126**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 1-09-2021 to 04-09-2019 |  |
| Week 2 | 06-09-2021 to 11-09-2021 |  |
| Week 3 | 13-09-2021 to 18-09-2021 |  |
| Week 4 | 20-09-2021 to 25-09-2021 | **Basic Cell Biology:** Cell as a basic unit of living systems: The cell theory, Precellular evolution: artificial creation of “cells”. |
| Week 5 | 27-09-2021 to 01-10-2021 | Introduction for structure and function of cell organelles: Ultra structure of cell membrane, cytosol, |
| Week 6 | 04-10-2021 to 09-10-2021 | Golgi bodies, endoplasmic reticulum (rough and smooth), ribosomes, cytoskeletal structures (actin, microtubules etc.) |
| Week 7 | 11-10-2021 to 16-10-2021 | Mitochondria, chloroplasts, lysosomes, peroxisomes, vacuoles. |
| Week 8 | 18-10-2021 to 19-10-2021 | Nucleus, nuclear membrane, nucleoplasm, nucleolus, chromatin, |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 9 | 01-11-2021 to 06-11-2021 | Cell motility (amoeboid, flagellar, and ciliar). Cell senescence and death. Cell division and cell cycle. |
| Week 10 | 08-11-2021 to 13-11-2021 | **Basic Biochemistry:** General properties of organic and inorganic compounds. Solubility of organic compoundsfor generation of structure, storage of energy and information. |
| Week 11 | 15-11-2021 to 20-11-2021 | Structure and functions of Biomolecules Carbohydrates |
| Week 12 | 22-11-2021 to 27-11-2021 | Proteins, Lipids, Nucleic Acids |
| Week 13 | 29-11-2021 to 04-12-2021 | Enzymes- Classification, Nomenclature, general properties. Regulation of enzyme activity, steady state kinetics. |
| Week 14 | 06-12-2021 to 11-12-2021 | Applications in industries – Enzymes in food processing, medicine, diagnostics and production of new compounds. Enzymes as research tools – ELISA methods, enzymes |
| Week 15 | 13-12-2021 to 16-12-2021 | REVISION & TEST |

**PG. GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Odd Semester (UG 1st Year)**

**Session (2021-2022)**

**Class: B.Sc. Micro. Elective 1st Semester Name of the Teacher: SUMIT DABHI**

**Subject: Fundamentals of Microbiology-I Period: 2nd Lecture (MON-TUE)**

**Paper: I Room No: 223**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 1-09-2021 to 04-09-2019 |  |
| Week 2 | 06-09-2021 to 11-09-2021 |  |
| Week 3 | 13-09-2021 to 18-09-2021 |  |
| Week 4 | 20-09-2021 to 25-09-2021 | Morphology and fine structure of bacteria, fungi, actinomycetes and algae |
| Week 5 | 27-09-2021 to 01-10-2021 | Morphology and fine structure of bacteria, fungi, actinomycetes and algae |
| Week 6 | 04-10-2021 to 09-10-2021 | Organization of cell wall, cell membrane, flagella and capsules in bacteria. |
| Week 7 | 11-10-2021 to 16-10-2021 | Organization of cell wall, cell membrane, flagella and capsules in bacteria. |
| Week 8 | 18-10-2021 to 19-10-2021 | Morphogenesis in bacteria, formation of spores and cysts. |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 9 | 01-11-2021 to 06-11-2021 | Microorganism Association with Vascular Plants: Rhizosphere and Rhizoplane microorganisms and Mycorrhizae. |
| Week 10 | 08-11-2021 to 13-11-2021 | Microorganism Association with Vascular Plants: Rhizosphere and Rhizoplane microorganisms and Mycorrhizae. |
| Week 11 | 15-11-2021 to 20-11-2021 | Nitrogen fixation: Symbiotic and nonsymbiotic and biofertilizers. |
| Week 12 | 22-11-2021 to 27-11-2021 | Nitrogen fixation: Symbiotic and nonsymbiotic and biofertilizers. |
| Week 13 | 29-11-2021 to 04-12-2021 | Biopesticides. |
| Week 14 | 06-12-2021 to 11-12-2021 | Biopesticides. |
| Week 15 | 13-12-2021 to 16-12-2021 | REVISION & TEST |

**PG. GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Odd Semester (For Ongoing Classes UG-PG)**

**Session (2021-2022)**

**Class: B.Sc.Biotech.(Elective) 3rd Semester Name of the Teacher: SUMIT DABHI**

**Subject: Fundamentals of Molecular Biology-I**

**Period: 3rd Lecture (MON-WED), Paper: II, Room No: 219**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 11-08-2021 to 14-08-2021 | Structure of prokaryotic and eukaryotic genes. |
| Week 2 | 16-08-2021 to 21-08-2021 | Structure of prokaryotic and eukaryotic genes. |
| Week 3 | 23-08-2021 to 28-08-2021 | Structure of prokaryotic and eukaryotic genes. |
| Week 4 | 31-08-2021 to 04-09-2019 | **DNA replication:** Both prokaryotes and eukaryotes, Properties of DNA polymerases, Synthesis of Leading and lagging strands |
| Week 5 | 06-09-2021 to 11-09-2021 | **DNA replication:** Both prokaryotes and eukaryotes, Properties of DNA polymerases, Synthesis of Leading and lagging strands |
| Week 6 | 13-09-2021 to 18-09-2021 | **DNA Repair:** Photo-reactivation, excision repair, post replication repair, SOS repair. |
| Week 7 | 20-09-2021 to 25-09-2021 | **DNA Repair:** Photo-reactivation, excision repair, post replication repair, SOS repair. |
| Week 8 | 27-09-2021 to 01-10-2021 | **DNA Repair:** Photo-reactivation, excision repair, post replication repair, SOS repair. |
| Week 9 | 04-10-2021 to 09-10-2021 | **Transcription-** RNA polymerase in prokaryotes – its molecular composition, role of each component of RNA polymerase, mechanism of transcription, |
| Week 10 | 11-10-2021 to 16-10-2021 | **Transcription-** RNA polymerase in prokaryotes – its molecular composition, role of each component of RNA polymerase, mechanism of transcription, |
| Week 11 | 18-10-2021 to 19-10-2021 | REVISION & TEST |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 12 | 01-11-2021 to 06-11-2021 | **Gene Expression-** Prokaryotic gene expression. *Lac*, *His*, *Trp* operons. Catabolite repression. |
| Week 13 | 08-11-2021 to 13-11-2021 | **Gene Expression-** Prokaryotic gene expression. *Lac*, *His*, *Trp* operons. Catabolite repression. |
| Week 14 | 15-11-2021 to 20-11-2021 | Eukaryotic gene expression and transcription factors. |
| Week 15 | 22-11-2021 to 27-11-2021 | Eukaryotic gene expression and transcription factors. |
| Week 16 | 29-11-2021 to 30-11-2021 | REVISION & TEST |

**PG. GOVT COLLEGE FOR GIRLS, SECTOR-42, CHANDIGARH**

**Teaching Plan Odd Semester (For Ongoing Classes UG-PG)**

**Session (2021-2022)**

**Class: B.Sc. Biotech. Elective 5th Semester Name of the Teacher: SUMIT DABHI**

**Subject: Plant & Animal Biotech. Period: 1st Lecture (MON-SAT)**

**Paper: Room No: 221**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 11-08-2021 to 14-08-2021 | Introduction & History of Plant tissue culture, |
| Week 2 | 16-08-2021 to 21-08-2021 | Nutrient Media, Plant Growth Regulators & their applications |
| Week 3 | 23-08-2021 to 28-08-2021 | Introduction to *in vitro* methods: Micropropagation-somatic embryogenesis & organogenesis, |
| Week 4 | 31-08-2021 to 04-09-2019 | Introduction to *in vitro* methods: Haploid Culture & their applications |
| Week 5 | 06-09-2021 to 11-09-2021 | Introduction to *in vitro* methods: Endosperm Culture, Embryo Culture |
| Week 6 | 13-09-2021 to 18-09-2021 | Somaclonal & gametoclonal variations |
| Week 7 | 20-09-2021 to 25-09-2021 | Protoplast isolation, methods, testing their viability & regeneration, various methods of fusion: somatic hybridization & their applications. |
| Week 8 | 27-09-2021 to 01-10-2021 | Direct and indirect transformation of plants. Tumor formation in plant using Agrobacterium tumefaciens. Mechanism of T-DNA transfer to plants. |
| Week 9 | 04-10-2021 to 09-10-2021 | Plasmid vectors for plant transformation. |
| Week 10 | 11-10-2021 to 16-10-2021 | Genetic manipulation of plants for virus resistance, pest resistance, herbicide tolerance, resistance to fungi and bacteria. |
| Week 11 | 18-10-2021 to 19-10-2021 | REVISION & TEST |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |  | Contamination & remedial measures. Monolayer and suspension cultures. Cryopreservation and germplasm storage. Establishment of gene banks. |
| Week 12 | 01-11-2021 to 06-11-2021 | Introduction to animal cell cultures. Requirement (laboratory equipment, media etc. primary and secondary culture cell lines). Anchorage dependence and contact inhibition. |
| Week 13 | 08-11-2021 to 13-11-2021 | Cytodifferentiation culturing of differentiation cells and retention of properties. Large scale production of animal cell in culture. |
| Week 14 | 15-11-2021 to 20-11-2021 | Transformation of animal cells. Transgenesis, applications of transgenic animal, Biopharming. |
| Week 15 | 22-11-2021 to 27-11-2021 | Stem cells: their applications in biology & medicine cloning: Procedure, applications & problems. |
| Week 16 | 29-11-2021 to 30-11-2021 | REVISION & TEST |