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

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

**Session (2021-2022)**

**Class: BSc. Bte- 1 Semester Name of the Teacher: Dr. Rachana Rana**

**Subject: Introduction to biotechnology Period : 2, 4,5 (2)**

**Paper : Room No : 221**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 1-09-2021 to 04-09-2019 | ADDMISSION |
| Week 2 | 06-09-2021 to 11-09-2021 | ADDMISSION |
| Week 3 | 13-09-2021 to 18-09-2021 | ADDMISSION |
| Week 4 | 20-09-2021 to 25-09-2021 | General Introduction: Origin and Definition of Biotechnology. |
| Week 5 | 27-09-2021 to 01-10-2021 | History from Biology to Biotechnology. Scope and importance: |
| Week 6 | 04-10-2021 to 09-10-2021 | Red, white, Green and Blue biotechnology. Biotechnology in India: Various Centres of Biotechnology in India, their objectives and achievements. |
| Week 7 | 11-10-2021 to 16-10-2021 | Emergence of Modern Biotechnology and its promises in agriculture, medicine and environmental sciences, |
| Week 8 | 18-10-2021 to 19-10-2021 | Regulatory issues in Biotechnology: Biosafety in developed & developing countries; |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 9 | 01-11-2021 to 06-11-2021 | Risk assessment and regulatory mechanism, |
| Week 10 | 08-11-2021 to 13-11-2021 | Good Laboratory Practices |
| Week 11 | 15-11-2021 to 20-11-2021 | Structure and function of cell:. |
| Week 12 | 22-11-2021 to 27-11-2021 | Prokaryotic and Eukaryotic cells. The basic unit of life |
| Week 13 | 29-11-2021 to 04-12-2021 | Organisms used as model systems in biotechnology: E.coli, Saccharomyces cerevisiae, Drosophila melanogaster, |
| Week 14 | 06-12-2021 to 11-12-2021 | Caenorhabditis elegans, Mus musculus, Arabidopsis thaliana. |
| Week 15 | 13-12-2021 to 16-12-2021 | Fundamentals of recombinant DNA Technology: Definition, Basic concept an Use of vectors. Regulatory issues in Biotechnology: Biosafety in developed & developing countries; |
|  |  | Use of vectors. |
|  |  | Regulatory issues in Biotechnology: Biosafety in developed & developing countries; |

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

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

**Session (2021-2022)**

**Class: BTH 3 SEMESTR Name of the Teacher: Dr. Rachana Rana**

**Subject: Plant tissue Culture Period :4 (1-5), 5 (6)**

**Paper : Room No : 127, 111**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 11-08-2021 to 14-08-2021 | |  | | --- | | Cellular totipotency and differentiation in plants. | |
| Week 2 | 16-08-2021 to 21-08-2021 | Plant Culture Media and their composition. |
| Week 3 | 23-08-2021 to 28-08-2021 | Sterilization techniques for glassware and tissue culture media. |
| Week 4 | 31-08-2021 to 04-09-2019 | Micropropagation: Establishment of aseptic culture, various stages, advantages and disadvantages. |
| Week 5 | 06-09-2021 to 11-09-2021 | Organogenesis; somatic embryogenesis; somaclonal variation |
| Week 6 | 13-09-2021 to 18-09-2021 | genetic basis and application in crop improvement. |
| Week 7 | 20-09-2021 to 25-09-2021 | Cell/callus line selection for resistance to herbicide, stress and diseases. |
| Week 8 | 27-09-2021 to 01-10-2021 | Role of tissue culture in rapid clonal propagation, |
| Week 9 | 04-10-2021 to 09-10-2021 | *production of pathogen - free plants* |
| Week 10 | 11-10-2021 to 16-10-2021 | *"synthetic seeds"haploid and Triploid plant production &their application.* |
| Week 11 | 18-10-2021 to 19-10-2021 | *Protoplast and somatic hybridization* |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 12 | 01-11-2021 to 06-11-2021 | Isolation, culture and plant regeneration |
| Week 13 | 08-11-2021 to 13-11-2021 | protoplast fusion,*identification* |
| Week 14 | 15-11-2021 to 20-11-2021 | applications of protoplast hybridization *technology.* |
| Week 15 | 22-11-2021 to 27-11-2021 | Secondary metabolites: Secondary Plant products from cultured cells and their industrial applications. |
| Week 16 | 29-11-2021 to 30-11-2021 | Cryopreservation of germplasm |

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

**Session (2021-2022)**

**Class: BTH 5 SEMESTER Name of the Teacher: Dr. Rachana Ran**

**Subject: Env Biotechnology Period : 6 (2,4), 2,5 (3), 3(5), 6(6)**

**Paper : Room No : 127, 122**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 11-08-2021 to 14-08-2021 | Basics of Environment and Environmental pollution, air, water, soil and noise. |
| Week 2 | 16-08-2021 to 21-08-2021 | Air – Types, Sources & Effects, |
| Week 3 | 23-08-2021 to 28-08-2021 | Soil - Physicochemical and bacteriological analysis of soil, soil pollutants (fertilizers,  insecticides fungicides, pesticides). |
| Week 4 | 31-08-2021 to 04-09-2019 | Noise pollution, its control and impact on human health.  Renewable and Non Renewable resources. and their Environmental Impacts. |
| Week 5 | 06-09-2021 to 11-09-2021 | Modern Fuels (gasohol, hydrogen and solar energy) and their Environmental Impacts. |
| Week 6 | 13-09-2021 to 18-09-2021 | Water pollution and its management: Measurement of water, pollution, sources of water pollution |
| Week 7 | 20-09-2021 to 25-09-2021 | Microbiology of waste water treatment, aerobic processes, activated sludge, oxidation ponds, trickling filters, and rotating biological contactors. |
| Week 8 | 27-09-2021 to 01-10-2021 | Anaerobic processes: Anaerobic digesters, upward flow anaerobic sludge blanket reactors |
| Week 9 | 04-10-2021 to 09-10-2021 | Bioremediation of contaminated soil and its applications |
| Week 10 | 11-10-2021 to 16-10-2021 | Degradation of pesticides and other toxic chemicals by microorganism |
| Week 11 | 18-10-2021 to 19-10-2021 | Integrated Pest management |
| **Mid Semester Exam (21st October 2021 – 30th October 2021)** | | |
| Week 12 | 01-11-2021 to 06-11-2021 | bioindicators |
| Week 13 | 08-11-2021 to 13-11-2021 | Nitrogen fixing microorganism, enrichment of the soil with assimilable nitrogen |
| Week 14 | 15-11-2021 to 20-11-2021 | Introduction to solid waste |
| Week 15 | 22-11-2021 to 27-11-2021 | municipal solid waste management: Sources, types, composition |
| Week 16 | 29-11-2021 to 30-11-2021 | Bioabsorption of metals:- Role of Microorganisms in biosorption and bioleaching. |