

# Post Graduate Government College for Girls, Sector-42, Chandigarh

## Teaching Plan for Bachelors (Third and Fifth Semester) and Post Graduate (Third Semester)

**Session (2020-2021)**

**Class: B.Sc. BTH 3<sup>RD</sup> SEM(2<sup>nd</sup> Yr)**

**Name of the Teacher: RACHANA RANA**

**Subject: PLANT TISSUE CULTURE**

**Paper:**

S. No	Dates	Topics to be Covered
Week 1	03/08/2020 – 08/08/2020	Cellular totipotency and differentiation in plants
Week 2	10/08/2020 – 14/08/2020	Plant Culture Media and their composition.
Week 3	17/08/2020 – 22/08/2020	Sterilization techniques for glassware and tissue culture media.
Week 4	24/08/2020 – 29/08/2020	Micropropagation: Establishment of aseptic culture, various stages, advantages and disadvantages.
Week 5	31/08/2020- 05/09/2020	Organogenesis; somatic embryogenesis; somaclonal variation
Week 6	07/09/2020- 12/09/2020	genetic basis and application in crop improvement.
Week 7	14/09/2020- 19/09/2020	Cell/callus line selection for resistance to herbicide, stress and diseases.
Week 8	21/09/2020- 26/09/2020	Role of tissue culture in rapid clonal propagation,
Week 9	28/09/2020- 03/10/2020	<i>production of pathogen - free plants</i>
Week 10	05/10/2020- 10/10/2020	<i>"synthetic seeds"haploid and Triploid plant production &amp;their application.</i>
Week 11	12/10/2020- 16/10/2020	<i>Protoplast and somatic hybridization</i>
Week 12	19/10/2020- 24/10/2020	<i>Characterization of somatic hybrids,</i>
Week 13	27/10/2020- 30/10/2020	Isolation, culture and plant regeneration
Week 14	03/11/2020- 07/11/2020	, protoplast fusion, <i>identification</i>
Week 15	09/11/2020- 12/11/2020	applications of protoplast hybridization <i>technology.</i>
Week 16	16/11/2020- 21/11/2020	Secondary metabolites: Secondary Plant products from cultured cells and their industrial applications.
Week 17	23/11/2020- 28/11/2020	Cryopreservation of germplasm

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**Session (2020-2021)**

**Class: B.SC. BTH- 5<sup>TH</sup> SEM(3<sup>rd</sup> Yr)**

**Name of the Teacher: RACHANA RANA**

**Subject: ENVIRONMENT BIOTECHNOLOGY**

**Paper:**

S. No	Dates	Topics to be Covered
Week 1	03/08/2020 – 08/08/2020	Basics of Environment and Environmental pollution, air, water, soil and noise.
Week 2	10/08/2020 – 14/08/2020	Air – Types, Sources & Effects,
Week 3	17/08/2020 – 22/08/2020	Soil - Physicochemical and bacteriological analysis of soil, soil pollutants (fertilizers, insecticides fungicides, pesticides).
Week 4	24/08/2020 – 29/08/2020	Noise pollution, its control and impact on human health. Renewable and Non Renewable resources. and their Environmental Impacts.
Week 5	31/08/2020- 05/09/2020	Modern Fuels (gasohol, hydrogen and solar energy) and their Environmental Impacts.
Week 6	07/09/2020- 12/09/2020	Water pollution and its management: Measurement of water, pollution, sources of water pollution
Week 7	14/09/2020- 19/09/2020	Microbiology of waste water treatment, aerobic processes, activated sludge, oxidation ponds, trickling filters, and rotating biological contactors.
Week 8	21/09/2020- 26/09/2020	Anaerobic processes: Anaerobic digesters, upward flow anaerobic sludge blanket reactors
Week 9	28/09/2020- 03/10/2020	Bioremediation of contaminated soil and its applications
Week 10	05/10/2020- 10/10/2020	Degradation of pesticides and other toxic chemicals by microorganism
Week 11	12/10/2020- 16/10/2020	Integrated Pest management
Week 12	19/10/2020- 24/10/2020	Biofertilizers for clean environment
Week 13	27/10/2020- 30/10/2020	bioindicators
Week 14	03/11/2020- 07/11/2020	Nitrogen fixing microorganism, enrichment of the soil with assimilable nitrogen
Week 15	09/11/2020- 12/11/2020	Introduction to solid waste
Week 16	16/11/2020- 21/11/2020	municipal solid waste management: Sources, types, composition
Week 17	23/11/2020- 28/11/2020	Bioabsorption of metals:- Role of Microorganisms in biosorption and bioleaching.

**Post Graduate Govt. College for Girls, Sector-42, Chandigarh**

**Teaching Plan for Bachelors (First Semester)**

**Session (2020-2021)**

**Class: B.SC. Biotech (E)1<sup>ST</sup> SEM(1<sup>st</sup> Yr) Name of the Teacher: RACHANA RANA**

**Subject: INTRODUCTION TO BIOTECHNOLOGY**

**Paper:**

<b>S. No</b>	<b>Dates</b>	<b>Topics to be Covered</b>
Week 1	01/09/2020-05/09/2020	General Introduction: Origin and Definition of Biotechnology.
Week 2	07/09/2020-12/09/2020	History from Biology to Biotechnology. Scope and importance:
Week 3	14/09/2020-19/09/2020	Red, white, Green and Blue biotechnology. Biotechnology in India: Various Centres of Biotechnology in India, their objectives and achievements.
Week 4	21/09/2020-26/09/2020	Emergence of Modern Biotechnology and its promises in agriculture, medicine and environmental sciences,
Week 5	28/09/2020-03/10/2020	Regulatory issues in Biotechnology: Biosafety in developed & developing countries;
Week 6	05/10/2020-10/10/2020	Biosafety levels, Protocols, Benefits and Risks, Risk assessment and regulatory mechanism, Good Laboratory Practices
Week 7	12/10/2020-16/10/2020	Structure and function of cell:.
Week 8	19/10/2020-24/10/2020	Prokaryotic and Eukaryotic cells. The basic unit of life
Week 9	27/10/2020-30/10/2020	Organisms used as model systems in biotechnology: E.coli, Saccharomyces cerevisiae, Drosophila melanogaster, Caenorhabditis elegans, Mus musculus, Arabidopsis thaliana.
Week 10	03/11/2020 – 07/11/2020	Role of viruses and bacteriophages in biotechnology.
Week 11	09/11/2020 – 12/11/2020	Fundamentals of recombinant DNA Technology: Definition, Basic concept and use of vectors.
Week 12	16/11/2020 – 21/11/2020	restriction enzymes and ligases.
Week 13	23/11/2020 – 28/11/2020	Basic Techniques in Biotechnology Sterilization techniques used in Biotechnology
Week 14	01/12/2020 – 05/12/2020	Microscopy: Principle, & working of various microscopes (bright field, phase contrast, fluorescent)
Week 15	07/12/2020 – 12/12/2020	Centrifugation: Theory, Types of centrifugation and their application to biological systems.
Week 16	14/12/2020 – 18/12/2020	Sonication. Chromatography: Principles, TLC, Gel permeation
Week 17	21/12/2020 – 26/12/2020	Ion exchange. Electrophoresis: Principle, types and applications.

