

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

Teaching Plan for (Odd Semester)

Session (2020-2021)

Class: B.Sc. Bioinfo.(E) 3rd-SEM(2<sup>nd</sup> Yr) Name of the Teacher: SUMIT DABHI

Subject: Fundamentals of Molecular Biology-I Paper:II

S. No	Dates	Topics to be Covered
Week 1	03/08/2020- 08/08/2020	Structure of prokaryotic and eukaryotic genes.
Week 2	10/08/2020- 14/08/2020	Structure of prokaryotic and eukaryotic genes.
Week 3	17/08/2020- 22/08/2020	Structure of prokaryotic and eukaryotic genes.
Week 4	24/08/2020- 29/08/2020	DNA replication: Both prokaryotes and eukaryotes Properties of DNA polymerases, Synthesis of Leading and lagging strands
Week 5	31/08/2020- 05/09/2020	DNA replication: Both prokaryotes and eukaryotes Properties of DNA polymerases, Synthesis of Leading and lagging strands
Week 6	07/09/2020- 12/09/2020	DNA Repair: Photo-reactivation, excision repair, post replication repair, SOS repair.
Week 7	14/09/2020- 19/09/2020	DNA Repair: Photo-reactivation, excision repair, post replication repair, SOS repair.
Week 8	21/09/2020- 26/09/2020	DNA Repair: Photo-reactivation, excision repair, post replication repair, SOS repair.
Week 9	28/09/2020- 03/10/2020	<b>Transcription</b> RNA polymerase in prokaryotes – its molecular composition, role of each component of RNA polymerase, mechanism of transcription,
Week 10	05/10/2020- 10/10/2020	<b>Transcription</b> RNA polymerase in prokaryotes – its molecular composition, role of each component of RNA polymerase, mechanism of transcription,
Week 11	12/10/2020- 17/10/2020	<b>Transcription</b> RNA polymerase in prokaryotes – its molecular composition, role of each component of RNA polymerase, mechanism of transcription
Week 12	19/10/2020- 24/10/2020	<b>Gene Expression</b> Prokaryotic gene expression. <i>Lac</i> , <i>His</i> , <i>Trp</i> operons. Catabolite repression Eukaryotic gene expression and transcription factors
Week 13	26/10/2020- 31/10/2020	<b>Gene Expression</b> Prokaryotic gene expression. <i>Lac</i> , <i>His</i> , <i>Trp</i> operons. Catabolite repression Eukaryotic gene expression and transcription factors
Week 14	02/11/2020- 07/11/2020	<b>Gene Expression</b> Prokaryotic gene expression. <i>Lac</i> , <i>His</i> , <i>Trp</i> operons. Catabolite repression Eukaryotic gene expression and transcription factors
Week 15	09/11/2020- 14/11/2020	Revision
Week 16	16/11/2020- 21/11/2020	Revision
Week 17	23/11/2020- 28/11/2020	Revision

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**Teaching Plan for (Odd Semester)**

**Session (2020-2021)**

**Class: B.Sc. Biotech. (E) 5th-SEM**

**Name of the Teacher: SUMIT DABHI**

**Subject: Plant & Animal Biotechnology**

**Paper:**

<b>S. No</b>	<b>Dates</b>	<b>Topics to be Covered</b>
Week 1	03/08/2020- 08/08/2020	Introduction & History of Plant tissue culture
Week 2	10/08/2020- 14/08/2020	Plant Growth Regulators & applications
Week 3	17/08/2020- 22/08/2020	Introduction to <i>in vitro</i> methods : Micropropagation-somatic embryogenesis & organogenesis,
Week 4	24/08/2020- 29/08/2020	Introduction to <i>in vitro</i> methods : Micropropagation-somatic embryogenesis & organogenesis,
Week 5	31/08/2020- 05/09/2020	Introduction to <i>in vitro</i> methods : Micropropagation-somatic embryogenesis & organogenesis,
Week 6	07/09/2020- 12/09/2020	Protoplast isolation, methods, testing their viability & regeneration
Week 7	14/09/2020- 19/09/2020	Various methods of fusion: somatic hybridization & their applications.
Week 8	21/09/2020- 26/09/2020	Direct and indirect transformation of plants. Tumor formation in plant using Agrobacterium tumefaciens. Mechanism of T-DNA transfer to plants, plasmid vectors for plant transformation.
Week 9	28/09/2020- 03/10/2020	Genetic manipulation of plants for virus resistance, pest resistance, herbicide tolerance, resistance to fungi and bacteria.
Week 10	05/10/2020- 10/10/2020	Introduction to animal cell cultures. Requirement (laboratory equipment, media etc. primary and secondary culture cell lines). Anchorage dependence and contact inhibition.
Week 11	12/10/2020- 17/10/2020	Introduction to animal cell cultures. Requirement (laboratory equipment, media etc. primary and secondary culture cell lines). Anchorage dependence and contact inhibition.
Week 12	19/10/2020- 24/10/2020	Contamination & remedial measures. Monolayer and suspension cultures. Cryopreservation and germplasm storage. Establishment of gene banks.
Week 13	26/10/2020- 31/10/2020	Cytodifferentiation culturing of differentiation cells and retention of properties. Large scale production of animal cell in culture.
Week 14	02/11/2020- 07/11/2020	Transformation of animal cells. Transgenesis, applications of transgenic animal, Biofarming.
Week 15	09/11/2020- 14/11/2020	Stem cells : their applications in biology & medicine cloning : Procedure, applications & problems.
Week 16	16/11/2020- 21/11/2020	Revision
Week 17	23/11/2020- 28/11/2020	Revision

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**Teaching Plan for (Odd Semester)**

**Session (2020-2021)**

**Class: M.Sc. MBT 3<sup>rd</sup> -SEM(2<sup>nd</sup> Yr)**  
**Subject: Industrial Microbiology-II**

**Name of the Teacher: SUMIT DABHI**  
**Paper:**

<b>S. No</b>	<b>Dates</b>	<b>Topics to be Covered</b>
Week 1	03/08/2020- 08/08/2020	Manufacture of Baker's yeast
Week 2	10/08/2020- 14/08/2020	Single cell protein production especially Spirulina
Week 3	17/08/2020- 22/08/2020	Mushroom cultivation especially Agaricus bisporus
Week 4	24/08/2020- 29/08/2020	Probiotics, Prebiotics, Synbiotics
Week 5	31/08/2020- 05/09/2020	Probiotics, Prebiotics, Synbiotics
Week 6	07/09/2020- 12/09/2020	Waste water and effluent treatment, Biodegradation of Xenobiotics,
Week 7	14/09/2020- 19/09/2020	Waste water and effluent treatment, Biodegradation of Xenobiotics,
Week 8	21/09/2020- 26/09/2020	Biofuel production especially Ethanol, Butanol, Methane, Hydrogen, Electricity, Biodiesel
Week 9	28/09/2020- 03/10/2020	Bioremediation, Biomining, Biodegradable plastics Bioinsecticides, Microbes as N and P Biofertilizers
Week 10	05/10/2020- 10/10/2020	Organic acids especially Amino acids (glutamic acid, lysine), Citric acid, Acetic acid, Lactic acid. Microbial exopolysaccharides
Week 11	12/10/2020- 17/10/2020	Organic acids especially Amino acids (glutamic acid, lysine), Citric acid, Acetic acid, Lactic acid. Microbial exopolysaccharides
Week 12	19/10/2020- 24/10/2020	Organic acids especially Amino acids (glutamic acid, lysine), Citric acid, Acetic acid, Lactic acid. Microbial exopolysaccharides
Week 13	26/10/2020- 31/10/2020	Good Lab Practices guidelines Good Manufacturing Processes guidelines. Guidelines for use of recombinant microbes
Week 14	02/11/2020- 07/11/2020	Good Lab Practices guidelines Good Manufacturing Processes guidelines. Guidelines for use of recombinant microbes
Week 15	09/11/2020- 14/11/2020	Important Biotech companies of India and the World Equipment validation, Analytical method validation, Process validation
Week 16	16/11/2020- 21/11/2020	Revision
Week 17	23/11/2020- 28/11/2020	Revision

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**Teaching Plan for (Odd Semester)**

**Session (2020-2021)**

**Class: BTH-1<sup>st</sup> -SEM**

**Name of the Teacher: SUMIT DABHI**

**Subject: Life Sciences**

**Paper:**

<b>S. No</b>	<b>Dates</b>	<b>Topics to be Covered</b>
Week 1	01/09/2020- 05/09/2020	An introduction to life on earth
Week 2	07/09/2020- 12/09/2020	<b>Plant Anatomy and Physiology:-</b> Structure of land plants.
Week 3	14/09/2020- 19/09/2020	Structure of land plants.
Week 4	21/09/2020- 26/09/2020	Structure of land plants.
Week 5	28/10/2020- 03/10/2020	Nutrition and Transport phenomena in plants.
Week 6	05/10/2020- 10/10/2020	Nutrition and Transport phenomena in plants.
Week 7	12/10/2020- 17/10/2020	Plant reproduction and development.
Week 8	19/10/2020- 24/10/2020	Plant reproduction and development.
Week 9	26/10/2020- 31/10/2020	Plant reproduction and development.
Week 10	02/11/2020- 07/11/2020	Plant responses to the environment.
Week 11	09/11/2020- 14/11/2020	Plant responses to the environment.
Week 12	16/11/2020- 21/11/2020	<b>Ecology:-</b> Community interactions.
Week 13	23/11/2020- 28/11/2020	<b>Ecosystems:-</b> Definition and components. Food chain and food web. Habitat. Ecological succession. Types of succession.
Week 14	30/11/2020- 05/12/2020	<b>Ecosystems:-</b> Definition and components. Food chain and food web. Habitat. Ecological succession. Types of succession.
Week 15	07/12/2020- 12/12/2020	Animal behaviour:-Definition and learning.
Week 16	14/12/2020- 19/12/2020	Revision
Week 17	21/12/2020- 26/12/2020	Revision

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**Teaching Plan for (Odd Semester)**

**Session (2020-2021)**

**Class: B.Sc. Bioinfo. (E) 1<sup>st</sup> SEM**

**Name of the Teacher: SUMIT DABHI**

**Subject: Cell biology & Biochemistry**

**Paper:**

<b>S. No</b>	<b>Dates</b>	<b>Topics to be Covered</b>
Week 1	01/09/2020- 05/09/2020	<b>Basic Cell Biology:</b> Cell as a basic unit of living systems: The cell theory, Precellular evolution: artificial creation of “cells”.
Week 2	07/09/2020- 12/09/2020	Introduction for structure and function of cell organelles: Ultra structure of cell membrane, cytosol,
Week 3	14/09/2020- 19/09/2020	golgi bodies, endoplasmic reticulum ( rough and smooth), ribosomes, cytoskeletal structures ( actin, microtubules etc.),
Week 4	21/09/2020- 26/09/2020	mitochondria, chloroplasts, lysosomes, peroxisomes, vacuoles.
Week 5	28/10/2020- 03/10/2020	Nucleus, nuclear membrane, nucleoplasm, nucleolus, chromatin,
Week 6	05/10/2020- 10/10/2020	Cell motility ( amoeboid, flagellar, and ciliar)
Week 7	12/10/2020- 17/10/2020	Cell senescence and death. Cell division and cell cycle.
Week 8	19/10/2020- 24/10/2020	<b>Basic Biochemistry:</b> General properties of organic and inorganic compounds. Solubility of organic compounds for generation of structure, storage of energy and information.
Week 9	26/10/2020- 31/10/2020	Structure and functions of Biomolecules Carbohydrates
Week 10	02/11/2020- 07/11/2020	Proteins, Lipids, Nucleic Acids
Week 11	09/11/2020- 14/11/2020	Enzymes- Classification, Nomenclature, general properties
Week 12	16/11/2020- 21/11/2020	Regulation of enzyme activity, steady state kinetics
Week 13	23/11/2020- 28/11/2020	Regulation of enzyme activity, steady state kinetics
Week 14	30/11/2020- 05/12/2020	Applications in industries – Enzymes in food processing, medicine, diagnostics and production of new compounds.
Week 15	07/12/2020- 12/12/2020	Applications in industries – Enzymes in food processing, medicine, diagnostics and production of new compounds.
Week 16	14/12/2020- 19/12/2020	Enzymes as research tools – ELISA methods, enzymes.
Week 17	21/12/2020- 26/12/2020	Revision