**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BTH II SEM**   **Name of the Teacher: Dr. Rachana Rana**

**Subject: General Microbiology Period :2, 6 (5,6)**

**Paper : Room No : 122, 110**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | History of Microbiology: A. Leewenhook, L. Pasteur, R. Koch, |
| Week 2 | 23/01/2023-28/01/2023 | History of Microbiology:J. Lister, J.Tyndall, Koch postulates, |
| Week 3 | 30/01/2023- 04/02/2023 | discovery of antibiotics.  Principle of microscopy: |
| Week 4 | 06/02/2023-11/02/2023 | Bright field, dark field, phase contrast, fluorescent, electron microscopy. |
| Week 5 | 13/02/2023-17/02/2023 | Microbial classification: Bacteria, fungi |
| Week 6 | 20/02/2023-25/02/2023 | Morphology of bacteria, viruses |
| Week 7 | 27/02/2023-04/03/2023 | fungi with major emphasis on |
| Week 8 | 06/03/2023-11/03/2023 | bacterial structure specially cell wall. |
| Week 9 | 13/03/2023-18/03/2023 | nutritional biodiversity, |
| Week 10 | 20/03/2023-25/03/2023 | phases of growth, generation time, growth rate |
| Week 11 | 27/03/2023-01/04/2023 | monoauxic, diauxic and synchronous growth. Chemostat |
| Week 12 | 03/04/2023-08/04/2023 | Physical and chemical agents to kill microbes, Sterilization, pasteurization processes |
| Week 13 | 10/04/2023-15/04/2023 | Normal micro flora in human/ animals. |
| Week 14 | 17/04/2023-21/04/2023 | Types of microbial pathogens and diseases caused by them. |
| Week 15 | 24/04/2023-29/04/2023 | Microbial interactions like symbiosis and antibiosis. |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BTH 1V SEM Name of the Teacher: Dr. Rachana Rana**

**Subject: Plant Biotechnology Period :4 (1-3), 4,7 (4, 6)**

**Paper : Room No : 111**

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| S. No | Dates | Topics to be covered |
| Week 1 | 16/01/2023 – 21/01/2023 | Genetic material of plant cells with an introduction to chloroplast and mitochondrial DNA.  Plant Promoter, Plant Selection markers and reporter genes. |
| Week 2 | 23/01/2023-28/01/2023 | Transformation of plant cells; different type of vectors including viral vectors and their benefits. |
| Week 3 | 30/01/2023- 04/02/2023 | PCR and hybridization methods; Transgene selection and silencing; |
| Week 4 | 06/02/2023-11/02/2023 | Generation and maintenance of transgenic plants. |
| Week 5 | 13/02/2023-17/02/2023 | Modes of gene delivery in plants: Particle bombardment, electroporation, microinjection;Advantages and disadvantages |
| Week 6 | 20/02/2023-25/02/2023 | Agrobacterium mediated gene transfer |
| Week 7 | 27/02/2023-04/03/2023 | natural pathogen mode of infection |
| Week 8 | 06/03/2023-11/03/2023 | vir gene functions |
| Week 9 | 13/03/2023-18/03/2023 | Virus resistance Bacterial |
| Week 10 | 20/03/2023-25/03/2023 | fungal resistance. |
| Week 11 | 27/03/2023-01/04/2023 | Delayed fruit ripening, improved protein composition. |
| Week 12 | 03/04/2023-08/04/2023 | Bt cotton, golden rice and some others as examples. |
| Week 13 | 10/04/2023-15/04/2023 | Plant cell as factories for production of industrial enzymes, |
| Week 14 | 17/04/2023-21/04/2023 | biodegradable plastics, antibodies,edible vaccines; |
| Week 15 | 24/04/2023-29/04/2023 | manipulation of metabolic pathways for production of fatty acids, industrial oils, |

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**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BTH VI SEM Name of the Teacher: Dr. Rachana Rana**

**Subject: Genetic Engineering Period :2,6 (4), 4 (6)**

**Paper : Room No : 122, 111**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Introduction to genetic engineering and its importance |
| Week 2 | 23/01/2023-28/01/2023 | How to clone a gene- overview of the procedure. |
| Week 3 | 30/01/2023- 04/02/2023 | Restriction and modification enzymes |
| Week 4 | 06/02/2023-11/02/2023 | Restiction sequences, isochizomers, rare cutting enzymes, |
| Week 5 | 13/02/2023-17/02/2023 | DNA modification enzymes, |
| Week 6 | 20/02/2023-25/02/2023 | Characteristics and application of Nuclease |
| Week 7 | 27/02/2023-04/03/2023 | PCR- types and application |
| Week 8 | 06/03/2023-11/03/2023 | Preparation of genomic and cDNA library |
| Week 9 | 13/03/2023-18/03/2023 | Partial digest, choice of vectors, construction and evaluation |
| Week 10 | 20/03/2023-25/03/2023 | cDNA library, mRNA enrichment |
| Week 11 | 27/03/2023-01/04/2023 | Finding the right clone- Gene identification |
| Week 12 | 03/04/2023-08/04/2023 | Nucleic acid hybridization, probe selection |
| Week 13 | 10/04/2023-15/04/2023 | Southern and northern blot |
| Week 14 | 17/04/2023-21/04/2023 | Preparation of nucleic acid probes- DNA and RNA labeling techniques |
| Week 15 | 24/04/2023-29/04/2023 | Nick translation, random priming, end labeling, radioactive and non- radioactive labels |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BTH VI SEM Name of the Teacher: Dr. Rachana Rana**

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

**Paper : Room No : 122, 111**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | History of microbiology |
| Week 2 | 23/01/2023-28/01/2023 | Classification of microbes |
| Week 3 | 30/01/2023- 04/02/2023 | Methods of microbial identification |
| Week 4 | 06/02/2023-11/02/2023 | Characteristics features of eubacteria, archaebacteria, |
| Week 5 | 13/02/2023-17/02/2023 | Fungi, algae, protozoa and viruses |
| Week 6 | 20/02/2023-25/02/2023 | Nutritional classification of micro organism |
| Week 7 | 27/02/2023-04/03/2023 | Microbes in extreme environment |
| Week 8 | 06/03/2023-11/03/2023 | Nature of microbial cell surface |
| Week 9 | 13/03/2023-18/03/2023 | Products from micro organism |
| Week 10 | 20/03/2023-25/03/2023 | Electron microscopy, Spectrometry |
| Week 11 | 27/03/2023-01/04/2023 | Radioisotops techniques |
| Week 12 | 03/04/2023-08/04/2023 | Crystallography |
| Week 13 | 10/04/2023-15/04/2023 | Hybridization techniques |
| Week 14 | 17/04/2023-21/04/2023 | Southern blotting |
| Week 15 | 24/04/2023-29/04/2023 | Northern blotting, western blotting |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: B. Sc. Biotechnology (Hons.) IV sem Name of the Teacher: Mrs Sonia Chauhan**

**Subject: Biophysical and Biochemical Techniques Period: (1,3,5)-III lec; (4)-V lec; (6)- IV lec; (1)-VII lec;**

**Paper: A Room No : 111 &122**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Principle, working and applications of Spectrophotometry (UV& visible) |
| Week 2 | 23/01/2023-28/01/2023 | Principle, working and applications of spectroflourimetry |
| Week 3 | 30/01/2023- 04/02/2023 | Atomic absorption spectrophotometry: Equipment used and applications, |
| Week 4 | 06/02/2023-11/02/2023 | ORD and circular dichroism, Microscopy |
| Week 5 | 13/02/2023-17/02/2023 | Infrared and Raman spectroscopy |
| Week 6 | 20/02/2023-25/02/2023 | Nuclear Magnetic Resonance, Electron Spin Resonance spectroscopy, Magnetic Resonance Imaging |
| Week 7 | 27/02/2023-04/03/2023 | Centrifugation: Principle, types & applications. |
| Week 8 | 06/03/2023-11/03/2023 | Crystallography: Physical basis of crystallization; formation of crystals; Mounting of crystals |
| Week 9 | 13/03/2023-18/03/2023 | X-ray diffraction: Braggs law; Diffraction of x-rays by crystals |
| Week 10 | 20/03/2023-25/03/2023 | Electrophoresis: Principle, types & applications |
| Week 11 | 27/03/2023-01/04/2023 | Overview of chromatography; Gas chromatography and HPLC |
| Week 12 | 03/04/2023-08/04/2023 | Radioisotope techniques: Radiotracers; GM counter, proportional and scintillation counters, |
| Week 13 | 10/04/2023-15/04/2023 | autoradiography |
| Week 14 | 17/04/2023-21/04/2023 | Mass spectrometry: Physical basis; Instrument used; ionization modes; Applications |
| Week 15 | 24/04/2023-29/04/2023 | Collaboration of MS with other techniques: GCMS and LCMS. |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: B. Sc. Biotechnology (Hons.) VI sem Name of the Teacher: Mrs Sonia Chauhan**

**Subject: Bioprocess Engg. & Technology Period: (2,5,6)-II lec; (1)- VI lec; (3,5)- VII lec**

**Paper: A Room No: 221, 111, 128**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | General Introduction to the subject; syllabus discussion, Fundamental principles of biochemical engineering |
| Week 2 | 23/01/2023-28/01/2023 | Sterilization of air and media sterilization,(Theory), |
| Week 3 | 30/01/2023- 04/02/2023 | design of batch sterilization Process; Del factor, sterilization cycle; class test |
| Week 4 | 06/02/2023-11/02/2023 | continuous sterilization process, sterilization of fermenters, filter design |
| Week 5 | 13/02/2023-17/02/2023 | Simple kinetics of microbial growth, yield coefficient, doubling time, specific growth rate (batch fermentation) |
| Week 6 | 20/02/2023-25/02/2023 | substrate inhibition kinetics, product inhibition kinetics; Class test |
| Week 7 | 27/02/2023-04/03/2023 | internal and external feed back systems, metabolic and Biomass  productivities, effect of temperature and pH on the product formation |
| Week 8 | 06/03/2023-11/03/2023 | Introduction: Design of fermenter |
| Week 9 | 13/03/2023-18/03/2023 | Types of fermenters, Aseptic operation of fermenters |
| Week 10 | 20/03/2023-25/03/2023 | Control and measurement equipments of fermenters….contd. |
| Week 11 | 27/03/2023-01/04/2023 | Control and measurement equipments of fermenters |
| Week 12 | 03/04/2023-08/04/2023 | Removal of microbial cells and opther solid materials, foam separation, Flocculation, filtration |
| Week 13 | 10/04/2023-15/04/2023 | ultrafiltration, Centrifugation, ultracentrifugation, Chromatographic methods DSP: cell disruptions, |
| Week 14 | 17/04/2023-21/04/2023 | Two phase aqueous separations, solvent-solvent extractions, Pre-treatment, crystallization, super critical extraction, whole broth process |
| Week 15 | 24/04/2023-29/04/2023 | Waste-water treatment for fermentation process |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: B. Sc. Biotechnology (Hons.) VI sem Name of the Teacher: Mrs Sonia Chauhan Subject: IPR, Ethical issues in BTH and Entrepreneurship Period: (2)-I lec ; (1)-II lec; (6)-III lec; (4)-IV lec; (2,3)-VI lec**

**Paper: A Room No : 127,221,122,111**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Introduction to Intellectual Property Rights; Tangible and intangible property. Patents: Introduction to patent law; conditions for patentability; procedure for obtaining patents, |
| Week 2 | 23/01/2023-28/01/2023 | Rights of a patentee; brief history (early GATT and TRIPS); patent filing through PCT |
| Week 3 | 30/01/2023- 04/02/2023 | patent infringements and litigation; Indian patent laws and amendments; Patents from an international perspective. |
| Week 4 | 06/02/2023-11/02/2023 | Copyright: Registration procedure and copyright authorities; assignment and transfer of copyright, copyright infringement; exceptions to infringement; software copyright |
| Week 5 | 13/02/2023-17/02/2023 | Designs: Introduction to the law on industrial designs; registration and piracy; international perspective; commercial exploitation and infringement |
| Week 6 | 20/02/2023-25/02/2023 | Trademark: Importance, Registration, Trademark infringement and piracy |
| Week 7 | 27/02/2023-04/03/2023 | Patenting in biotechnology: Biotechnology patents and its economic, ethical and depository considerations. |
| Week 8 | 06/03/2023-11/03/2023 | Patentable subject matter and legal aspects of transfer of biotechnology in India |
| Week 9 | 13/03/2023-18/03/2023 | Other multilateral treaties &  International conventions – Paris convention, CBD, UPOV, PGRFA |
| Week 10 | 20/03/2023-25/03/2023 | Writing a patent specification; Information sources in patent literature search. |
| Week 11 | 27/03/2023-01/04/2023 | Entrepreneurship:  Entrepreneur and its types, Women Entrepreneurship |
| Week 12 | 03/04/2023-08/04/2023 | Selection of a product, Product line design and  development processes, |
| Week 13 | 10/04/2023-15/04/2023 | Concept of product lifecycle and product economics.  . |
| Week 14 | 17/04/2023-21/04/2023 | Business development: Strategies in Biotechnology |
| Week 15 | 24/04/2023-29/04/2023 | Financial support from Government especially MSMEs. |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG Classes)**

**Session (2022-2023)**

**Class: B.Sc. Biotech.(Elective) 6th Sem**  **Name of the Teacher: Sumit Dabhi**

**Subject: Environment & Fermentation Biotechnology Period: 2nd Lecture (Mon-Wed) Room No: 301**

**5th Lecture (Thu-Sat) Room No: 223**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Isolation and screening of microbes of industrial importance. Strain Improvement: mutations and genetic manipulations. Metabolites: Primary and secondary metabolic designs (expansion of substrate spectrum, product yield, redesigning of secondary metabolic pathways.) Preservation of microbes. |
| Week 2 | 23/01/2023-28/01/2023 | Introduction to fermentation processes: Inoculum development for industrial fermentation. Substrates for fermentation media. |
| Week 3 | 30/01/2023- 04/02/2023 | Sterilization: Principles and practices; fermenters and its accessories, fermentation media. Types of industrial fermentations: Submerged, surface, continuous, bubble, cap bed batch etc. |
| Week 4 | 06/02/2023-11/02/2023 | Fermentation equipment: Design of fermenters, tank construction materials, control panels, antifoams, autoclaving. |
| Week 5 | 13/02/2023-17/02/2023 | Energetic of microbial growth in fermenters: Reaction rates, heat and mass transfer, transport phenomenon in reactors, macroscopic balances of energy and energy flow. |
| Week 6 | 20/02/2023-25/02/2023 | Upstream and downstream processing of industrial fermentations, Cell disruptions, centrifugation, flocculation, filtration, ultrafiltration, ultracentrifugation, gel filtration, chromatographic methods, and two-phase aqueous separations. Immobilization of cells and enzymes. Hygiene and safety in a fermentation laboratory. |
| Week 7 | 27/02/2023-04/03/2023 | Upstream and downstream processing of industrial fermentations, Cell disruptions, centrifugation, flocculation, filtration, ultrafiltration, ultracentrifugation, gel filtration, chromatographic methods, and two-phase aqueous separations. Immobilization of cells and enzymes. Hygiene and safety in a fermentation laboratory. |
| Week 8 | 06/03/2023-11/03/2023 | Introduction to Environment. Renewable and Non-Renewable resources. Conventional Fuels and their Environmental Impacts. Modern Fuels and their Environmental Impacts. |
| Week 9 | 13/03/2023-18/03/2023 | Methanogenic bacteria and biogas, microbial hydrogen production, conversion of sugars to ethanol |
| Week 10 | 20/03/2023-25/03/2023 | the gasohol experiment, solar energy, converters – Hopes from the Photosynthetic pigments. Treatment of municipal waste and industrial effluents. |
| Week 11 | 27/03/2023-01/04/2023 | Degradation of pesticides and other toxic chemicals by microorganism. Biodegradation of organic compounds. |
| Week 12 | 03/04/2023-08/04/2023 | Bacillus thuringiensis Toxin as a Natural Pesticide. Biological control of other insects swarming the agricultural fields. |
| Week 13 | 10/04/2023-15/04/2023 | Enrichment of ores by microorganisms. Biofertilizers – Nitrogen fixing microorganism enrich the soil with assimilable nitrogen. |
| Week 14 | 17/04/2023-21/04/2023 | REVISION |
| Week 15 | 24/04/2023-29/04/2023 | REVISION |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG Classes)**

**Session (2022-2023)**

**Class: BTH-5TH SEM**  **Name of the Teacher: Sumit Dabhi**

**Subject: Genomics & Proteomics**

**Period: 1st & 7th lecture (Mon), 5th & 7th lecture (Tue), 6th lecture (Fri & Sat)**

**Room No: 111,127,128**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Introduction to Genomics, DNA sequencing methods – manual & automated: Maxam & Gilbert and Sanger’s method. Pyrosequencing, Genome Sequencing: Shotgun & Hierarchical (clone contig) methods, Computer tools for sequencing projects: Genome sequence assembly software. |
| Week 2 | 23/01/2023-28/01/2023 | Introduction to Genomics, DNA sequencing methods – manual & automated: Maxam & Gilbert and Sanger’s method. Pyrosequencing, Genome Sequencing: Shotgun & Hierarchical (clone contig) methods, Computer tools for sequencing projects: Genome sequence assembly software. |
| Week 3 | 30/01/2023- 04/02/2023 | Introduction to Genomics, DNA sequencing methods – manual & automated: Maxam & Gilbert and Sanger’s method. Pyrosequencing, Genome Sequencing: Shotgun & Hierarchical (clone contig) methods, Computer tools for sequencing projects: Genome sequence assembly software. |
| Week 4 | 06/02/2023-11/02/2023 | Introduction to Genomics, DNA sequencing methods – manual & automated: Maxam & Gilbert and Sanger’s method. Pyrosequencing, Genome Sequencing: Shotgun & Hierarchical (clone contig) methods, Computer tools for sequencing projects: Genome sequence assembly software. |
| Week 5 | 13/02/2023-17/02/2023 | Managing and Distributing Genome Data: Web based servers and softwares for genome analysis: ENSEMBL, VISTA, UCSC Genome Browser, NCBI genome. Selected Model Organisms' Genomes and Databases. |
| Week 6 | 20/02/2023-25/02/2023 | Managing and Distributing Genome Data: Web based servers and softwares for genome analysis: ENSEMBL, VISTA, UCSC Genome Browser, NCBI genome. Selected Model Organisms' Genomes and Databases. |
| Week 7 | 27/02/2023-04/03/2023 | Managing and Distributing Genome Data: Web based servers and softwares for genome analysis: ENSEMBL, VISTA, UCSC Genome Browser, NCBI genome. Selected Model Organisms' Genomes and Databases. |
| Week 8 | 06/03/2023-11/03/2023 | Introduction to protein structure, Chemical properties of proteins. Physical interactions that determine the property of proteins. Short-range interactions, electrostatic forces, van der waal interactions, hydrogen bonds, Hydrophobic interactions. Determination of sizes (Sedimentation analysis, gel filteration, SDS-PAGE); Native PAGE, Determination of covalent structures – Edman degradation. |
| Week 9 | 13/03/2023-18/03/2023 | Introduction to protein structure, Chemical properties of proteins. Physical interactions that determine the property of proteins. Short-range interactions, electrostatic forces, van der waal interactions, hydrogen bonds, Hydrophobic interactions. Determination of sizes (Sedimentation analysis, gel filteration, SDS-PAGE); Native PAGE, Determination of covalent structures – Edman degradation. |
| Week 10 | 20/03/2023-25/03/2023 | Introduction to protein structure, Chemical properties of proteins. Physical interactions that determine the property of proteins. Short-range interactions, electrostatic forces, van der waal interactions, hydrogen bonds, Hydrophobic interactions. Determination of sizes (Sedimentation analysis, gel filteration, SDS-PAGE); Native PAGE, Determination of covalent structures – Edman degradation. |
| Week 11 | 27/03/2023-01/04/2023 | Introduction to Proteomics, Analysis of proteomes. 2D-PAGE. Sample preparation, solubilization, reduction, resolution. Reproducibility of 2D-PAGE. Mass spectrometry-based methods for protein identification. De novo sequencing using mass spectrometric data. |
| Week 12 | 03/04/2023-08/04/2023 | Introduction to Proteomics, Analysis of proteomes. 2D-PAGE. Sample preparation, solubilization, reduction, resolution. Reproducibility of 2D-PAGE. Mass spectrometry-based methods for protein identification. De novo sequencing using mass spectrometric data. |
| Week 13 | 10/04/2023-15/04/2023 | Introduction to Proteomics, Analysis of proteomes. 2D-PAGE. Sample preparation, solubilization, reduction, resolution. Reproducibility of 2D-PAGE. Mass spectrometry-based methods for protein identification. De novo sequencing using mass spectrometric data. |
| Week 14 | 17/04/2023-21/04/2023 | REVISION |
| Week 15 | 24/04/2023-29/04/2023 | REVISION |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG Classes)**

**Session (2022-2023)**

**Class: BTH-4TH SEM**   **Name of the Teacher: Sumit Dabhi**

**Subject: Agro & IBT**

**Period:** **1st lecture (Wed & Thu)**, **2nd (Sat), 3rd Lecture (Tue), 6th Lecture (Thu),**

**7th Lecture (Fri)**  **Room No: 111, 122**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Basic concept of agriculture as industry: Industrially important microbes, its screening, selection and identification. |
| Week 2 | 23/01/2023-28/01/2023 | Maintenance and preservation of industrially important microbial cultures. |
| Week 3 | 30/01/2023- 04/02/2023 | Differences between microbial industrial process and chemical industrial process |
| Week 4 | 06/02/2023-11/02/2023 | Improvement programme of industrial microbes, mutational programme of penicillin producing microorganisms. |
| Week 5 | 13/02/2023-17/02/2023 | selection pressure in maintaining the hyper producer, lowering of production due to reversal of mutations |
| Week 6 | 20/02/2023-25/02/2023 | media formulation and process optimization of industrial and agro industrial microbes. |
| Week 7 | 27/02/2023-04/03/2023 | media formulation and process optimization of industrial and agroindustrial microbes. |
| Week 8 | 06/03/2023-11/03/2023 | Microbes in agro industries and industrial biotechnology: Introduction of primary and secondary metabolites, production of vitamin B12, antibiotics (penicillin), |
| Week 9 | 13/03/2023-18/03/2023 | alcohol, wine, beer, cheese, |
| Week 10 | 20/03/2023-25/03/2023 | bread, citric acid, gluconic acid, |
| Week 11 | 27/03/2023-01/04/2023 | enzymes (amylases, cellulases, lipases and proteases) and their industrial applications. |
| Week 12 | 03/04/2023-08/04/2023 | Emerging technologies in agro industries: production of vermiculture, composting, herbicides and biopesticides, production of biofertilizers: |
| Week 13 | 10/04/2023-15/04/2023 | Emerging technologies in agro industries: production of vermiculture, composting, herbicides and biopesticides, production of biofertilizers: |
| Week 14 | 17/04/2023-21/04/2023 | Blue green algae, azolla, fungi, mycorrhiza (VAM), bacteria – *Azospirrilum*, microbial biotransformations |
| Week 15 | 24/04/2023-29/04/2023 | single cell proteins (bacterial,fungal and algal). |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG Classes)**

**Session (2022-2023)**

**Class: BTH-2ND SEM**   **Name of the Teacher: Sumit Dabhi**

**Subject: Cell Biology**

**Period: 4th Lecture (Wed & Thu) Room No : 110**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Cell as a basic unit of living systems: the cell theory, pre-cellular evolution, artificial creation of "cells", broad classification and ultrastructure of cell types (PPLOs, Bacteria, eukaryotic microbes, plant and animal cells), tissue, organ and organism at different level of organization of other genetically similar cells; |
| Week 2 | 23/01/2023-28/01/2023 | Cell as a basic unit of living systems: the cell theory, pre-cellular evolution, artificial creation of "cells", broad classification and ultrastructure of cell types (PPLOs, Bacteria, eukaryotic microbes, plant and animal cells), tissue, organ and organism at different level of organization of other genetically similar cells; |
| Week 3 | 30/01/2023- 04/02/2023 | Cell as a basic unit of living systems: the cell theory, pre-cellular evolution, artificial creation of "cells", broad classification and ultrastructure of cell types (PPLOs, Bacteria, eukaryotic microbes, plant and animal cells), tissue, organ and organism at different level of organization of other genetically similar cells; |
| Week 4 | 06/02/2023-11/02/2023 | Cell as a basic unit of living systems: the cell theory, pre-cellular evolution, artificial creation of "cells", broad classification and ultrastructure of cell types (PPLOs, Bacteria, eukaryotic microbes, plant and animal cells), tissue, organ and organism at different level of organization of other genetically similar cells; |
| Week 5 | 13/02/2023-17/02/2023 | biochemical comparison of cells (proteins, lipids, carbohydrates, nucleic acids and metabolic pool). |
| Week 6 | 20/02/2023-25/02/2023 | biochemical comparison of cells (proteins, lipids, carbohydrates, nucleic acids and metabolic pool). |
| Week 7 | 27/02/2023-04/03/2023 | biochemical comparison of cells (proteins, lipids, carbohydrates, nucleic acids and metabolic pool). |
| Week 8 | 06/03/2023-11/03/2023 | Ultrastructure of cell membrane and cell organelle: structure and function of cell organelles, ultrastrucure of cell membrane, cytosol, golgi bodies, vacuoles, endoplasmic reticulum (rough and smooth), ribosomes, cytoskeletal structures (actin microtubules etc), mitochondria, chloroplast, lysosomes, peroxisomes, nucleus (nuclear membrane, nucleoplasm, nucleolus). |
| Week 9 | 13/03/2023-18/03/2023 | Ultrastructure of cell membrane and cell organelle: structure and function of cell organelles, ultrastrucure of cell membrane, cytosol, golgi bodies, vacuoles, endoplasmic reticulum (rough and smooth), ribosomes, cytoskeletal structures (actin microtubules etc), mitochondria, chloroplast, lysosomes, peroxisomes, nucleus (nuclear membrane, nucleoplasm, nucleolus). |
| Week 10 | 20/03/2023-25/03/2023 | Ultrastructure of cell membrane and cell organelle: structure and function of cell organelles, ultrastrucure of cell membrane, cytosol, golgi bodies, vacuoles, endoplasmic reticulum (rough and smooth), ribosomes, cytoskeletal structures (actin microtubules etc), mitochondria, chloroplast, lysosomes, peroxisomes, nucleus (nuclear membrane, nucleoplasm, nucleolus). |
| Week 11 | 27/03/2023-01/04/2023 | Ultrastructure of cell membrane and cell organelle: structure and function of cell organelles, ultrastrucure of cell membrane, cytosol, golgi bodies, vacuoles, endoplasmic reticulum (rough and smooth), ribosomes, cytoskeletal structures (actin microtubules etc), mitochondria, chloroplast, lysosomes, peroxisomes, nucleus (nuclear membrane, nucleoplasm, nucleolus). |
| Week 12 | 03/04/2023-08/04/2023 | Cellular transport: Passive & active transport, permeases, sodium, potassium, Calcium, ATPase pumps, lysosomal and vacuolar membrane, ATP dependent proton pumps, co-transport symport, antiport, transport into prokaryotic cells, endocytosis and exocytosis, entry of viruses and toxins into cells |
| Week 13 | 10/04/2023-15/04/2023 | Cellular transport: Passive & active transport, permeases, sodium, potassium, Calcium, ATPase pumps, lysosomal and vacuolar membrane, ATP dependent proton pumps, co-transport symport, antiport, transport into prokaryotic cells, endocytosis and exocytosis, entry of viruses and toxins into cells |
| Week 14 | 17/04/2023-21/04/2023 | REVISION |
| Week 15 | 24/04/2023-29/04/2023 | REVISION |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class:** B.Sc. Biotech (Hons.) 2nd year (4th Semester)

**Name of the Teacher: Dr. Sunita Kumari**

**Subject:** Animal Biotechnology

**Period : 1st,4th**

**Room No : 111**

|  |  |  |
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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Organotypic culture, Gas and nutrient exchange, structure integrity, growth, differentiation |
| Week 2 | 23/01/2023-28/01/2023 | Advantages and applications. Methods, advantages and applications of histotypic culture |
| Week 3 | 30/01/2023- 04/02/2023 | Three-dimensional culture and tissue engineering: Concept of tissue engineering, components of tissue engineering |
| Week 4 | 06/02/2023-11/02/2023 | Cells imaging in 3D construct, In vitro fertilization (IVF) in Humans |
| Week 5 | 13/02/2023-17/02/2023 | Embryo Transfer in Livestock. Cells as virus host/cell culture based vaccines, cells as protein factory/cell expression system |
| Week 6 | 20/02/2023-25/02/2023 | Cells as antigen presenter/personalized vaccine. Scaling up of the animal cell culture: different methods of scale up at laboratory level |
| Week 7 | 27/02/2023-04/03/2023 | Transgenic animals and their applications: Concept of transgenics |
| Week 8 | 06/03/2023-11/03/2023 | Methods of gene transfer, Selection of clone containing DNA insert |
| Week 9 | 13/03/2023-18/03/2023 | Application of transgenic animals (Food, environment, recombinant proteins, drugs etc.). |
| Week 10 | 20/03/2023-25/03/2023 | Safety and ethical issues of transgenic animals |
| Week 11 | 27/03/2023-01/04/2023 | Production of various products of human use using animal cell culture: Antibiotics production |
| Week 12 | 03/04/2023-08/04/2023 | Human Growth factors |
| Week 13 | 10/04/2023-15/04/2023 | Human Growth factors |
| Week 14 | 17/04/2023-21/04/2023 | Insulin and other Hormones |
| Week 15 | 24/04/2023-29/04/2023 | Insulin and other Hormones |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class:** B.Sc. Biotech (Hons.) 2nd year (4th Semester)

**Name of the Teacher: Dr. Sunita Kumari**

**Subject:** Immunology-II

**Period : 2nd Room No : 111**

|  |  |  |
| --- | --- | --- |
| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Lymphocyte Trafficking: Cell surface proteins |
| Week 2 | 23/01/2023-28/01/2023 | Cell Adhesion molecules (Integrin, Selectin, Cadherin family and Ig Superfamily) |
| Week 3 | 30/01/2023- 04/02/2023 | Complement system: Function, Components Classic, Alternative, Mannose binding proteins, activation |
| Week 4 | 06/02/2023-11/02/2023 | Regulation of the Complement System, Biological Consequences of Complement Activation |
| Week 5 | 13/02/2023-17/02/2023 | Hybridoma Technology: Production of Monoclonal Antibodies |
| Week 6 | 20/02/2023-25/02/2023 | applications of polyclonal and monoclonal antibodies. Antigen–Antibody interactions -Strength of interaction |
| Week 7 | 27/02/2023-04/03/2023 | cross reactivity, antibody affinity, avidity. Antigen-antibody interactions as tools for research and diagnosis- precipitation and agglutination reactions |
| Week 8 | 06/03/2023-11/03/2023 | Immunodiffusion, immunoelectrophoresis, immunoassays, Enzyme linked immunosorbent assay (ELISA), Radioimmunoassay (RIA), |
| Week 9 | 13/03/2023-18/03/2023 | western blot, Immunofluorescence |
| Week 10 | 20/03/2023-25/03/2023 | Hypersensitivity: Type I, Type II, Type III |
| Week 11 | 27/03/2023-01/04/2023 | Type IV Hypersensitivity reactions and their implications. Autoimmunity: Organ specific autoimmune diseases: Hashimoto’s Thyroditis, Insulin-dependent Diabetes Mellitus |
| Week 12 | 03/04/2023-08/04/2023 | Grave’s disease, Mysthenia Gravis. Systemic Autoimmune Disease: Systemic lupus Erythmatosus (SLE). Transplantation immunology- Immunologic Basis of Graft Rejection, Clinical Manifestations of Graft Rejection |
| Week 13 | 10/04/2023-15/04/2023 | General Immunosuppressive Therapy, Specific Immunosuppressive Therapy, Immune Tolerance to Allografts, Clinical Transplantation 8. Vaccines and Vaccination – principles of vaccination |
| Week 14 | 17/04/2023-21/04/2023 | passive & active immunization, immunization programs, adjuvants, bacterial vaccines, viral vaccines |
| Week 15 | 24/04/2023-29/04/2023 | polysaccharide vaccines, DNA vaccines, recombinant vaccines,  vaccines to other infectious agents, tumor vaccines. |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class:** B.Sc. Biotech (Hons.) 2nd year (4th Semester)

**Name of the Teacher: Dr. Sunita Kumari**

**Subject:** Biotechnology

**Period : 4th Room No : 223**

|  |  |  |
| --- | --- | --- |
| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Structure of Prokaryotic and eukaryotic genes |
| Week 2 | 23/01/2023-28/01/2023 | Structure of Prokaryotic and eukaryotic genes |
| Week 3 | 30/01/2023- 04/02/2023 | Transcription: Initiation, Elongation &Termination in prokaryotes |
| Week 4 | 06/02/2023-11/02/2023 | Transcription: Initiation, Elongation &Termination in prokaryotes |
| Week 5 | 13/02/2023-17/02/2023 | Transcription: Initiation, Elongation &Termination in eukaryotes |
| Week 6 | 20/02/2023-25/02/2023 | Post transcriptional modifications |
| Week 7 | 27/02/2023-04/03/2023 | Mendelian Laws of inheritance |
| Week 8 | 06/03/2023-11/03/2023 | Chromosomal theory of inheritance Chromosome structure and organization |
| Week 9 | 13/03/2023-18/03/2023 | chromosomal banding Structural and numerical aberrations in chromosomes |
| Week 10 | 20/03/2023-25/03/2023 | Gene mapping – linkage Population genetics |
| Week 11 | 27/03/2023-01/04/2023 | Mutations:- Types, chemical and physical mutagen |
| Week 12 | 03/04/2023-08/04/2023 | Mutations:- Types, chemical and physical mutagen |
| Week 13 | 10/04/2023-15/04/2023 | induced mutations in plants, animal and microbes and their importance. |
| Week 14 | 17/04/2023-21/04/2023 | Insertion elements and Transposons |
| Week 15 | 24/04/2023-29/04/2023 | Insertion elements and Transposons |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class:** B.Sc. (Hons.) 1st year (2nd Semester

**Name of the Teacher: Dr. Sunita Kumari**

**Subject:** Cell Biology

**Period : 4th ,6th**

**Room No : 110**

|  |  |  |
| --- | --- | --- |
| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Cell locomotion: Amoeboid, Flagellar and Ciliar. |
| Week 2 | 23/01/2023-28/01/2023 | Cell locomotion: Amoeboid, Flagellar and Ciliar. |
| Week 3 | 30/01/2023- 04/02/2023 | Chromosomes: discovery, morphology, chemical composition |
| Week 4 | 06/02/2023-11/02/2023 | structural organization of chromatids, centromere, telomere, chromatin, |
| Week 5 | 13/02/2023-17/02/2023 | nucleosome organization, euchromatin and heterochromatin, |
| Week 6 | 20/02/2023-25/02/2023 | special chromosomes (polytene, lampbrush chromosomes |
| Week 7 | 27/02/2023-04/03/2023 | special chromosomes (polytene, lampbrush chromosomes |
| Week 8 | 06/03/2023-11/03/2023 | banding patterns in human chromosomes. |
| Week 9 | 13/03/2023-18/03/2023 | Basics of stem cells: Introduction to concepts in stem cell biology |
| Week 10 | 20/03/2023-25/03/2023 | Cell differentiation in multicellular organisms: (renewal, potency: Totipotent, pluripotent, multipotent); |
| Week 11 | 27/03/2023-01/04/2023 | types of stem cells: early embryonic stem cells, blastocyst embryonic stem cells |
| Week 12 | 03/04/2023-08/04/2023 | fetal stem cells, umbilical cord stem cells |
| Week 13 | 10/04/2023-15/04/2023 | adult stem cells; |
| Week 14 | 17/04/2023-21/04/2023 | applications; ethical issues related to stem cells. |
| Week 15 | 24/04/2023-29/04/2023 | applications; ethical issues related to stem cells. |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class:BTH-1**   **Name of the Teacher: Dr Vikas Sharma**

**Subject: Stats & Computer Fund Period :3rd (3,4)**

**Paper : Stats & Computer Fund Room No : 110**

|  |  |  |
| --- | --- | --- |
| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Introduction to computers |
| Week 2 | 23/01/2023-28/01/2023 | Organization of Computers |
| Week 3 | 30/01/2023- 04/02/2023 | Computer Algorithms |
| Week 4 | 06/02/2023-11/02/2023 | Batch oriented, Real Time, Online applications |
| Week 5 | 13/02/2023-17/02/2023 | Primary Storage |
| Week 6 | 20/02/2023-25/02/2023 | Secondary Storage devices |
| Week 7 | 27/02/2023-04/03/2023 | Input/ Output Devices |
| Week 8 | 06/03/2023-11/03/2023 | Secondary Storage devices |
| Week 9 | 13/03/2023-18/03/2023 | Input/ Output Devices |
| Week 10 | 20/03/2023-25/03/2023 | Printed outputs |
| Week 11 | 27/03/2023-01/04/2023 | Printed outputs |
| Week 12 | 03/04/2023-08/04/2023 | Stored Programs |
| Week 13 | 10/04/2023-15/04/2023 | Communication with Computers |
| Week 14 | 17/04/2023-21/04/2023 | Data storage devices |
| Week 15 | 24/04/2023-29/04/2023 | Data storage devices |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BTH-2nd Sem**   **Name of the Teacher: Dr Ruchi**

**Subject: Basic BCH Period: 3rd**

**Paper: Basic BCH Room No: 110**

|  |  |  |
| --- | --- | --- |
| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Carbohydrates: Structure of important mono, di-, oligo- and polysaccharides, glycoproteins, peptidoglycan |
| Week 2 | 23/01/2023-28/01/2023 | glycolipids and lipopolysaccharides. Storage polysaccharides and cell walls. Acid mucopolysaccharides. |
| Week 3 | 30/01/2023- 04/02/2023 | Enantiomers and anomers. Reaction of monosaccharides. |
| Week 4 | 06/02/2023-11/02/2023 | Nucleic Acids: Structures of RNA & DNA |
| Week 5 | 13/02/2023-17/02/2023 | Water: Physico chemical properties of water, dissociation and association constants. |
| Week 6 | 20/02/2023-25/02/2023 | pH and buffers, pI, pka, Henderson Hasselbatch equation and its implications. |
| Week 7 | 27/02/2023-04/03/2023 | Proteins: Structure of amino acids, nonprotein and rare amino acids and their chemical reactions. |
| Week 8 | 06/03/2023-11/03/2023 | Structural organization of proteins (primary, secondary, tertiary and quaternary domain structure), |
| Week 9 | 13/03/2023-18/03/2023 | protein classification and function. Forces stabilizing primary, secondary and tertiary structure. |
| Week 10 | 20/03/2023-25/03/2023 | steroids and peptide hormones. |
| Week 11 | 27/03/2023-01/04/2023 | steroids and peptide hormones. |
| Week 12 | 03/04/2023-08/04/2023 | Types of vitamins and their chemistry, vitamins as co-factors, |
| Week 13 | 10/04/2023-15/04/2023 | Lipids: Classification of lipids and fatty acids, general functions and structure of major lipid subclasses, |
| Week 14 | 17/04/2023-21/04/2023 | acylglycerols, phosphoglycerols, phosphoglycerides, sphingolipids, glycosphingolipids and terpenes, |
| Week 15 | 24/04/2023-29/04/2023 | sterols, steroids: Prostaglandins. |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BTE-2nd Sem**   **Name of the Teacher: Dr Ruchi**

**Subject: Biotechnology Period: 3rd**

**Paper: Biotechnology Room No: 219**

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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Structure & Functions of Biomolecules: Carbohydrates – Classification, characteristics, chemical reactions and functions of monosaccharides, disaccharides, |
| Week 2 | 23/01/2023-28/01/2023 | polysaccharides (structural and storage). Epimers, isomers, anomers, pyranose and furanose forms, Reducing and non-reducing sugars. |
| Week 3 | 30/01/2023- 04/02/2023 | Proteins: Classification of proteins according to biological functions (Enzymes, transport, storage, contractile, structural, defense and regulatory), |
| Week 4 | 06/02/2023-11/02/2023 | Classification, structure and chemical reactions of amino acids, |
| Week 5 | 13/02/2023-17/02/2023 | primary, secondary, tertiary and quaternary structure in proteins. |
| Week 6 | 20/02/2023-25/02/2023 | Enzymes: Classification, nomenclature, general properties, regulation of enzyme activity. Steady state kinetics. |
| Week 7 | 27/02/2023-04/03/2023 | Applications in industries: Enzymes in food processing, medicine, diagnostics and production of new compounds Enzymes as research tools: ELISA methods, immobilized enzymes. |
| Week 8 | 06/03/2023-11/03/2023 | Lipids: Classification and function of lipids. |
| Week 9 | 13/03/2023-18/03/2023 | Fatty acids: General formula, nomenclature and chemical properties. |
| Week 10 | 20/03/2023-25/03/2023 | Structure, function and properties of simple, complex, acylglycerols, phosphoglycerides, sphingolipids, waxes, terpenes, steroids and prostaglandins. |
| Week 11 | 27/03/2023-01/04/2023 | Structure, function and properties of simple, complex, acylglycerols, phosphoglycerides, sphingolipids, waxes, terpenes, steroids and prostaglandins. |
| Week 12 | 03/04/2023-08/04/2023 | Suitability of organic compounds for generation of structure, storage of energy & information. |
| Week 13 | 10/04/2023-15/04/2023 | Suitability of organic compounds for generation of structure, storage of energy & information. |
| Week 14 | 17/04/2023-21/04/2023 | Revision |
| Week 15 | 24/04/2023-29/04/2023 | Revision |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class:BTE-4th Sem**  **Name of the Teacher: Dr Ruchi**

**Subject: Biotechnology Period : 4th**

**Paper: Biotechnology Room No : 223**

|  |  |  |
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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Molecular basis of life Structure of DNA, evidences, properties, types. |
| Week 2 | 23/01/2023-28/01/2023 | DNA replication both prokaryotes and eukaryotes |
| Week 3 | 30/01/2023- 04/02/2023 | DNA polymerases |
| Week 4 | 06/02/2023-11/02/2023 | Translation :Initiation, Elongation and Termination in prokaryotes and Eukaryotes |
| Week 5 | 13/02/2023-17/02/2023 | Translation :Initiation, Elongation and Termination in prokaryotes and Eukaryotes |
| Week 6 | 20/02/2023-25/02/2023 | Post translation modifications : Acetylation, glycosylation and phosphorylation |
| Week 7 | 27/02/2023-04/03/2023 | Prokaryotic gene expression (Lac, His, trp operons, catabolic repression) |
| Week 8 | 06/03/2023-11/03/2023 | Prokaryotic gene expression (Lac, His, trp operons, catabolic repression) |
| Week 9 | 13/03/2023-18/03/2023 | Eukaryotic gene expression |
| Week 10 | 20/03/2023-25/03/2023 | Eukaryotic gene expression (transcription factors, enhancers, insulators) |
| Week 11 | 27/03/2023-01/04/2023 | Eukaryotic gene expression (transcription factors, enhancers, insulators) |
| Week 12 | 03/04/2023-08/04/2023 | DNA recombination molecular mechanism prokaryotic and eukaryotic |
| Week 13 | 10/04/2023-15/04/2023 | DNA recombination molecular mechanism prokaryotic and eukaryotic |
| Week 14 | 17/04/2023-21/04/2023 | Revision |
| Week 15 | 24/04/2023-29/04/2023 | Revision |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BTH-3**   **Name of the Teacher: Dr Ruchi**

**Subject: Food BT Period: 5th**

**Paper: Food BT Room No: 111**

|  |  |  |
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| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Food adulterants and food additives: Major food adulterants, types and their methods of assay, |
| Week 2 | 23/01/2023-28/01/2023 | food additives their function and uses, flavoring agents, coloring agents and vitamins as food additives. Genetically modified food (Golden rice, Favr savr tomato, protato, pomato etc) |
| Week 3 | 30/01/2023- 04/02/2023 | Fermented foods and their production: Bakers yeast, Bread, cheese, yoghurt, tofu, Production of algal, fungal and other microbial proteins( SCP and mushroom etc) |
| Week 4 | 06/02/2023-11/02/2023 | miso, tempeh, sauerkraut, meat and alcoholic beverages ( beer and wine) |
| Week 5 | 13/02/2023-17/02/2023 | Probiotics, prebiotics,fortified and biofortified foods, functional foods, nutraceuticals. |
| Week 6 | 20/02/2023-25/02/2023 | Food and water borne diseases: Shigellosis, Salmonellosis, Cholera. Food borne intoxications: Staphylococcal, Bacillus and Clostridium botulinum |
| Week 7 | 27/02/2023-04/03/2023 | Exotoxins and Endotoxins, their mechanism of action |
| Week 8 | 06/03/2023-11/03/2023 | Principles of food preservation: Physical, chemical, and biological methods of preservations. |
| Week 9 | 13/03/2023-18/03/2023 | Contamination, preservation and spoilage of different kind of foods: Milk and milk products (milk, butter, yoghurt and cheese), beverages (beer, wine), meat and fish products (sausages, nuggets, frozen fish, canned fish), vegetables and fruits. |
| Week 10 | 20/03/2023-25/03/2023 | Food and Microorganisms: History and scope of Food biotechnology, food as substrates for microbes, factors affecting growth of microorganisms, |
| Week 11 | 27/03/2023-01/04/2023 | Detection of microorganisms in food: Sampling plan & procedure for microbial analysis; Qualitative methods to isolate pathogenic microorganisms, test for bacterial toxins in foods |
| Week 12 | 03/04/2023-08/04/2023 | Quantitative methods for microbial enumeration: Direct enumeration, indirect estimations and standard and recommended methods; |
| Week 13 | 10/04/2023-15/04/2023 | Introduction to Rapid and advanced estimation methods (Immunoassays, nucleic acid probe) for detection of pathogens; |
| Week 14 | 17/04/2023-21/04/2023 | Applications of enzymes in food technology. |
| Week 15 | 24/04/2023-29/04/2023 | Revision |

**POST GRADUATE GOVERNMENT COLLEGE FOR GIRLS**

**SECTOR-42, CHANDIGARH**

**Teaching Plan Even Semester (UG and PG)**

**Session (2022-2023)**

**Class: BTH-3**   **Name of the Teacher: Dr Ruchi**

**Subject: Food BT Period: 5th**

**Paper: Food BT Room No: 111**

|  |  |  |
| --- | --- | --- |
| **S. No** | **Dates** | **Topics to be covered** |
| Week 1 | 16/01/2023 – 21/01/2023 | Food adulterants and food additives: Major food adulterants, types and their methods of assay, |
| Week 2 | 23/01/2023-28/01/2023 | food additives their function and uses, flavoring agents, coloring agents and vitamins as food additives. Genetically modified food (Golden rice, Favr savr tomato, protato, pomato etc) |
| Week 3 | 30/01/2023- 04/02/2023 | Fermented foods and their production: Bakers yeast, Bread, cheese, yoghurt, tofu, Production of algal, fungal and other microbial proteins( SCP and mushroom etc) |
| Week 4 | 06/02/2023-11/02/2023 | miso, tempeh, sauerkraut, meat and alcoholic beverages ( beer and wine) |
| Week 5 | 13/02/2023-17/02/2023 | Probiotics, prebiotics,fortified and biofortified foods, functional foods, nutraceuticals. |
| Week 6 | 20/02/2023-25/02/2023 | Food and water borne diseases: Shigellosis, Salmonellosis, Cholera. Food borne intoxications: Staphylococcal, Bacillus and Clostridium botulinum |
| Week 7 | 27/02/2023-04/03/2023 | Exotoxins and Endotoxins, their mechanism of action |
| Week 8 | 06/03/2023-11/03/2023 | Principles of food preservation: Physical, chemical, and biological methods of preservations. |
| Week 9 | 13/03/2023-18/03/2023 | Contamination, preservation and spoilage of different kind of foods: Milk and milk products (milk, butter, yoghurt and cheese), beverages (beer, wine), meat and fish products (sausages, nuggets, frozen fish, canned fish), vegetables and fruits. |
| Week 10 | 20/03/2023-25/03/2023 | Food and Microorganisms: History and scope of Food biotechnology, food as substrates for microbes, factors affecting growth of microorganisms, |
| Week 11 | 27/03/2023-01/04/2023 | Detection of microorganisms in food: Sampling plan & procedure for microbial analysis; Qualitative methods to isolate pathogenic microorganisms, test for bacterial toxins in foods |
| Week 12 | 03/04/2023-08/04/2023 | Quantitative methods for microbial enumeration: Direct enumeration, indirect estimations and standard and recommended methods; |
| Week 13 | 10/04/2023-15/04/2023 | Introduction to Rapid and advanced estimation methods (Immunoassays, nucleic acid probe) for detection of pathogens; |
| Week 14 | 17/04/2023-21/04/2023 | Applications of enzymes in food technology. |
| Week 15 | 24/04/2023-29/04/2023 | Revision |