KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester
(January to May, 2026)

Name of the Teacher–Dr. Preeti Sharma
Class- M.Sc. Biotechnology, Sem II
Subject- Animal Cell and Tissue Culture
Paper- M24-BTY-202

3rdWeek **12, 13, 14 Jan**	Animal cell and tissues culture: Historical background, development, advantages and limitations of cell & tissue culture.
18 Jan,2026	**Sunday**
4thWeek **19, 20, 21 Jan**	Requirements of cell & tissue culture: aseptic area, incubation. Preparation and sterilization
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ BasantPanchmi** **Sunday** **Republic Day**
5thWeek **27, 28 Jan**	Storage, specialized equipment, consumable items. Aseptic techniques: elements of aseptic cnvironment, sterile handling
February,2026 **1stWeek** **1Feb, 2026**	**Guru RavidasJayanti,Sunday**
2, 3, 4 Feb	Culture vessels and substrates: the substrate, choice of culture vessel, treated surfaces.
8Feb, 2026	**Sunday**
2ndWeek **9, 10, 11 Feb**	Techniques of cell culture - batch, batch fed and continuous cultures, cytotoxicity and viability assays
15 Feb, 2026	**MahaShivratri , Sunday**
3rdWeek **16, 17, 18 Feb**	Cell separation techniques, Flow cytometry and fluorescence associated cell sorting.
22Feb,2026	**Sunday**
4thWeek **23, 24, 25 Feb**	Design and types of media: balanced salt solutions, complete media, role of serum and supplements, serum free media: advantages and disadvantages of serum and serum free media.

March,2026 **1st Week** **1March – 8 March**	**Holi Break**
2ndWeek **9, 10, 11 March**	Replacement of serum, development of serum free media. Primary culture: types of primary cell culture, isolation of the tissue, primary culture,
15March, 2026	**Sunday**
3rdWeek **16, 17, 18 March**	Sub-culturing of animal cells: Subculture and propagation, Criteria for subculture.
21March, 2026 **22March, 2026** **23March, 2026**	**Id-ul-Fitr** **Sunday** **ShaheediDiwas / Martyrdom day of Bhagat Singh/Rajguru&Sukhdev**
4thWeek **24, 25 March**	Subculture of monolayer cells. Growth cycle and split ratio, propagation and subculture in suspension.
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
5thWeek **30 March**	Cloning and selection: dilution and suspension cloning, scaling up in suspension and monolayer
31March, 2026	**MahavirJayanti**
April,2026 1st Week **1April**	Revision
5April,2026	**Sunday**
2ndWeek **6 April-11April**	**Sessional Exams**
12April,2026	**Sunday**
3rdWeek **13, 15 April**	Large scale production of cells using bioreactors, micro-carriers and perfusion techniques
14April,2026 **19April,2026**	**Dr. B.R.AmbedkarJayanti/Vaisakhi** **ParshuramJayanti /AkshayTirtiya, Sunday**
4thWeek **20, 21, 22 April**	Cell line characterization: need for characterization, authentication, cell morphology, chromosome content, DNA content, RNA and protein expression, enzyme activity, antigen markers. Industrial products of animal cell cultures: enzymes, hormones, monoclonal antibody, c1'tokines, tissue plasminogen activators etc.
26April,2026	**Sunday**
5thWeek **27, 28, 29 April**	Applications of animal cell culture: Stem cell technology, virology, cancer research, gene therapy, drug development and cytotoxicity. animal cloning, genetic counselling, cryopreservation and cell banking.
3May,2026	**Sunday**
May,2026 **2nd Week** **4, 5 May**	Revision
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V.COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester

(January to May, 2026)

Name of the Teacher– Dr. Preeti Sharma and Dr. Ritu Rani
Class – M.Sc. II Semester IV
Subject– Environmental Biotechnology
Paper– M24-BTY-402

3rdWeek **12, 15, 16, 17 Jan**	**Environmental Biotechnology:** An overview, concept, scope and market Biological control of air pollution.
18 Jan,2026	**Sunday**
4thWeek **19, 22, 24 Jan**	Bacterial examination of water for potability. Testing of water for physiochemical parameters including BOD & COD.
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ Basant Panchmi** **Sunday** **Republic Day**
5thWeek **29, 30, 31 Jan**	Solid waste: Sources and management (composting, vermi-composting and methane production).
February,2026 **1stWeek** **1Feb, 2026**	**Guru Ravidas Jayanti, Sunday**
2, 5, 6, 7 Feb	**Waste water:** origin, composition and treatment. Physical, chemical and biological treatment of waste water.
8Feb, 2026	**Sunday**
2ndWeek **9, 12, 13, 14 Feb**	Aerobic processes: activated sludge, oxidation ponds, trickling filter towers, and rotating discs.
15 Feb, 2026	**MahaShivratri , Sunday**
3rdWeek **16, 19, 20, 21 Feb**	Anaerobic processes: anaerobic digesters, anaerobic filters and upflow sludge blanket reactors.
22Feb,2026	**Sunday**
4thWeek **23, 26, 27, 28Feb**	Microbiology and biochemistry of aerobic and anaerobic waste water treatment processes.

March,2026 1st Week 1March – 8 March, 2026	**Holi Break**
2ndWeek 9, 12, 13, 14 March	**Treatment of industrial effluents:** distillery effluent, paper and pulp mill effluent, tannary effluent, textile dye effluent, removal of heavy metals from waste waters.
15March, 2026	**Sunday**
3rdWeek 16, 19, 20 March	**Bioremediation :** Introduction of Bioremediation; advantages and applications; Types of Bioremediation, Natural (attenuation), Ex-situ and In-situ , Bioaugmentation and Biostimulation, Solid Phase and slurry phase bioremediation
21March, 2026 22March, 2026 23March, 2026	**Id-ul-Fitr Sunday Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4thWeek 26, 27, 28 March	**Biodegradation**: Aerobic vs. Anaerobic Degradation; Microbial basis of Biodegradation, Biodegradation of Xenobiotics, Microbial degradation of pesticides
26 March, 2026 29 March, 2026	**Ram Navmi Sunday**
5thWeek 30 March	**Biotechnological methods of pollution detection:** General Bioassays in pollution monitoring,
31March, 2026	**Mahavir Jayanti**
April,2026 1st Week 2, 3, 4 April	Cell biology in environmental monitoring. Revision
5April,2026	**Sunday**
2ndWeek 6 April–11April	**Sessional Exams**
12April,2026	**Sunday**
3rdWeek 13, 16, 17, 18 April	Molecular biology in environmental monitoring and Biosensors in environmental analysis
14April,2026 19April,2026	**Dr. B.R.Ambedkar Jayanti/Vaisakhi Parshuram Jayanti /Akshay Tirtiya, Sunday**
4thWeek 20, 23, 24, 25 April	**Microbial Insecticides :** Bacteria, fungi and viruses. Use of R-DNA technology to enhance the efficacy of microbial insecticides.
26April,2026	**Sunday**
5thWeek 27, 30 April	Biofertilizers, Microbes in oil recovery and bioleaching. Biodeterioration of stored plant food materials, leather, wool, metals, textiles, stone & related building.
May,20261st Week 1, 2 May	Control of microbial biodeterioration.
3May,2026	**Sunday**
2ndWeek 4 May	Revision
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V.COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester

(January to May, 2026)

Name of the Teacher– Dr. Ritu Rani

Class –B.Voc. In Food Science and Quality Control Semester- II

Subject– Food Chemistry

Paper– B23-FTQ-202

4th Week **19 Jan–21 Jan, 2026**	Food chemistry: Definition, scope and importance; water in food, Water activity and shelf life of food.
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ Basant Panchmi** **Sunday** **Republic Day**
5th Week **27 Jan, 28 Jan, 2026**	Chemistry and stability of water and fat soluble vitamins; chemical properties of minerals and their bio availability, enrichment and fortification.
February,2026 **1st Week** **1 Feb, 2026**	**Guru Ravidas Jayanti, Sunday**
2 Feb– 4 Feb, 2026	Carbohydrates: Classification, physical and chemical properties of sugars, functional properties and uses of pectic substances.
8 Feb, 2026	**Sunday**
2nd Week **9 Feb-11 Feb, 2026**	Gums and dietary fiber in food, browning reaction in food: enzymatic and non enzymatic browning, their occurrence and applications in food; starches.
15 Feb, 2026	**MahaShivratri , Sunday**
3rd Week **16 Feb-18 Feb, 2026**	Functionality of starch in foods, gelatinization and retro gradation of starches, modified starches, resistant starches.
22 Feb, 2026	**Sunday**
4thWeek **23 Feb-25 Feb, 2026**	Proteins: Structures and sources of proteins.

March, 2026 **1st Week** **1March – 8 March, 2026**	**Holi Break**
2nd Week **9 March– 11 March, 2026**	Chemical and physical properties of protein, changes during processing protein penetration mechanism (folding and unfolding) and application.
15 March, 2026	**Sunday**
3rd Week **16 March–18 March, 2026**	Browning reaction: Enzymatic and non enzymatic browning, advantages and disadvantages.
21 March, 2026 **22 March, 2026** **23 March, 2026**	**Id-ul-Fitr** **Sunday** **Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4th Week **24 March, 25 March, 2026**	Factors affecting their reaction and control, Lipid: Structure, physical and chemical property.
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
5th Week **30 March, 2026**	Utilization of fats and oil, margarines, shortening, Hydrogenation and its importance.
31 March, 2026	**Mahavir Jayanti**
April, 2026 **1st Week, 1 April, 2026**	Lipid per oxidation: mechanism, development of rancidity, antioxidants in foods; types and function etc.
5 April, 2026	**Sunday**
2nd Week **6 April-8 April, 2026**	**Sessional Exams**
12April, 2026	**Sunday**
3rd Week **13 April-15 April, 2026**	Plant pigments: Structure and properties of chlorophyll, anthocyanins Structure and properties of carotenoids.
14 April,2026 **19 April,2026**	**Dr. B.R.Ambedkar Jayanti/Vaisakhi** **Parshuram Jayanti /Akshay Tirtiya, Sunday**
4th Week **20 April - 22 April, 2026**	Chemical changes during processing, Flavour and aroma of foods, Importance and method of retention of flavor and technology.
26 April, 2026	**Sunday**
5th Week **27 April - 29 April**	Flavor enhancer MSG, recent development in flavor technology.

May, 2026, 1st Week **2 May, 2026**	**Revision and Discussion.**
3 May, 2026	**Sunday**
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V.COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester

(January to May, 2026)

Name of the Teacher– Dr. Ritu Rani

Class – M.Sc. II Semester IV

Subject– Entrepreneurship and Diagnostic Lab Techniques

Paper– M24-BTY-409

1st Week **3 Jan, 2026**	Introduction of Entrepreneurship.
2nd Week **8Jan, 10 Jan, 2026**	Principles of entrepreneurial development, Qualities of an entrepreneur.
3rd Week **15Jan, 17 Jan, 2026**	Functions and types of entrepreneurs. Industrial licensing,
18 Jan,2026	**Sunday**
4th Week **22 Jan, 24 Jan, 2026**	venture capital, Biotechnological industries in India and potential job opportunities.
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ Basant Panchmi** **Sunday** **Republic Day**
5th Week **29 Jan, 31 Jan, 2026**	Challenges of bioentrepreneurship in India and measures to promote bioentrepreneurship in India.
Feb,2026 1st Week **1 Feb, 2026**	**Guru Ravidas Jayanti, Sunday**
5 Feb, 7 Feb, 2026	Project Management: Formulation, Identification and selection based on Size.
8 Feb, 2026	**Sunday**
2nd Week **12 Feb, 14 Feb, 2026**	Technological assessment, Project cost and market potential. Process of drug development and licensing.
15 Feb, 2026	**MahaShivratri , Sunday**
3rd Week **19 Feb, 21 Feb, 2026**	Guidelines for release of GMOs and their derived products in India, Immuno-chromatographic diagnostic test strips and their advantages.
22 Feb,2026	**Sunday**
4thWeek **26 Feb, 28 Feb, 2026**	Fast methods (biochemical and molecular) for microbial identification and confirmation, Sterile disk method to test antibiotic sensitivity.

March, 2026 **1st Week** **1March – 8 March, 2026**	**Holi Break**
2nd Week **12 March, 14 March, 2026**	Biosensors for detecting biomolecules and use in physiological monitoring. Advantages and limitations of biosensors.
15 March, 2026	**Sunday**
3rd Week **19 March, 2026**	**Revision and Discussion**
21 March, 2026 **22 March, 2026** **23 March, 2026**	**Id-ul-Fitr** **Sunday** **Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4th Week **26 March, 28 March**	Specimen Collection and handling of different types of clinical specimens.
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
31 March, 2026	**Mahavir Jayanti**
April, 2026 **1st Week** **2 April, 4 April, 2026**	Hematological tests (e.g., complete blood count, erythrocyte sedimentation rate, blood group and Rh factor, coagulation tests and interpretation).
5 April, 2026	**Sunday**
2nd Week **9April, 11 April**	**Sessional Exams**
12April, 2026	**Sunday**
3rd Week **16 April, 18 April, 2026**	An overview of cancer biomarkers: types, tests and importance in management of cancer disease.
14 April,2026 **19 April,2026**	**Dr. B.R.Ambedkar Jayanti/Vaisakhi** **Parshuram Jayanti /Akshay Tirtiya, Sunday**
4th Week **23 April, 25 April**	Biochemical analysis of various fluids and other samples (e.g., liver function tests, kidney function tests, thyroid function tests, lipid profile tests, sugar test).
26 April,2026	**Sunday**
5th Week **30 April, 2026**	Applications of techniques such as ELISA, PCR, HPLC and Mass Spectroscopy in diagnostics.
May,2026 **1st Week** **2 May, 2026**	**Revision and Discussion**
3 May, 2026	**Sunday**
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V.COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester

(January to May, 2026)

Name of the Teacher– Dr. Ritu Rani

Class – M.Sc. II Semester IV

Subject– Biosafety, Bioethics and IPR matters of Biotechnology

Paper– M24-BTY-406

1st Week **3 Jan, 2026**	Biosafety: Introduction; Historical background.
2nd Week **6Jan–8 Jan,** **10 Jan, 2026**	Biosafety in the laboratory; Laboratory associated infections and other hazards.
3rd Week **13Jan–15 Jan,** **17 Jan, 2026**	Biosafety management for environmentally safe use of biotechnology; Biosafety guidelines; Recommended Biosafety Levels for Infectious Agents and Infected Animals.
18 Jan,2026	**Sunday**
4th Week **20 Jan–22 Jan,** **24 Jan, 2026**	Definition of GMOs & LMOs; Good manufacturing practices (GMP) and Good lab practices(GLP); Overview of National Regulations and relevant International Agreements including Cartagena Protocol.
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ Basant Panchmi** **Sunday** **Republic Day**
5th Week **27 Jan–29 Jan,** **31 Jan, 2026**	Overview of National Regulations and relevant International Agreements including Cartagena Protocol.

February,2026 **1st Week** **1 Feb, 2026**	**Guru Ravidas Jayanti, Sunday**
3 Feb– 5 Feb, 7 Feb, 2026	Roles of Institutional Biosafety Committee (IBSC), RCGM, GEAC, MEC, SBCC, DLC and RDAC.
8 Feb, 2026	**Sunday**
2nd Week **10 Feb-12 Feb,** **14 Feb, 2026**	Guidelines for research in transgenic sciences and release of GMOs to environment; Bioterrorism and convention on biological weapons.
15 Feb, 2026	**MahaShivratri , Sunday**
3rd Week **17 Feb-19 Feb,** **21 Feb, 2026**	Bioethics: Ethical issues related to biotechnology research; Ethical issues associated with consumptions of genetically modified foods and other products.
22 Feb, 2026	**Sunday**
4thWeek **24 Feb-26 Feb,** **28 Feb, 2026**	Ethical implications of human genome project, Social and ethical implications of biological weapons, Bioremediations and environmental impacts of using GMOs.
March, 2026 **1st Week** **1March – 8 March, 2026**	**Holi Break**
2nd Week **10 March–12 March,** **14 March, 2026**	Ethics of patenting- and its impact on biodiversity rich developing countries; Use of animals for research and testing and Alternatives for Animals in Research.
15 March, 2026	**Sunday**
3rd Week **17 March–19 March, 2026**	Social, economic and legal issues related to biotechnology: Public education of the processes of biotechnology involved in generating new forms of life for informed decision making;
21 March, 2026 **22 March, 2026** **23 March, 2026**	**Id-ul-Fitr** **Sunday** **Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4th Week **24 March–26 March,** **28 March, 2026**	Testing of drugs on human volunteers; Human cloning and Gene therapy - ethical and social issues; Organ transplantation- ethical and legal implications.
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
31 March, 2026	**Mahavir Jayanti**

April, 2026 **1st Week** **1 April, 2 April,** **4 April, 2026**	Research focus to address the need of the poor and of environment. Intellectual Property Rights: Intellectual property rights and IPR protection.
5 April, 2026	**Sunday**
2nd Week **7 April-9 April,** **11 April, 2026**	**Sessional Exams**
12April, 2026	**Sunday**
3rd Week **14 April-16 April,** **18 April, 2026**	Patenting and the procedure involved in the application of patents and granting of a patent; Compulsory licenses; Legislations covering IPR's in India.
14 April, 2026 **19 April, 2026**	**Dr. B.R.Ambedkar Jayanti/Vaisakhi** **Parshuram Jayanti /Akshay Tirtiya, Sunday**
4th Week **21 April - 23 April,** **25 April, 2026**	Patent search; Patent Cooperation Treaty (PCT); Traditional knowledge commercial exploitation.
26 April, 2026	**Sunday**
5th Week **28 April - 30 April,** **2026**	International and National conventions on Biotechnology and related areas- GATT, TRIPS, Biodiversity convention, etc.
May,2026 **1st Week** **2 May, 2026**	Farmer's rights; Plant breeder's rights.
3 May, 2026	**Sunday**
2nd Week **5 May, 2026**	**Revision and Discussion**
6 May, 2026 **Onwards**	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester
(January to May, 2026)

Name of the Teacher– Dr. Twinkle Sugla
Class – B.Sc. 1st year, Sem II (Minor)
Subject – Introduction to Biological Chemistry
Paper – B23-BTY- 203

3rdWeek 15 Jan, 2026	Basic constituents of matter - elements, atoms, isotopes, atomic weights, atomic numbers, basics of mass spectrometry, molecules.
18 Jan,2026	**Sunday**
4thWeek 22 Jan, 2026	Avogadro number, Molarity, Molality, Normality, gas constant, Molecular weights.
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ BasantPanchmi** **Sunday** **Republic Day**
5thWeek 29Jan,2026	Structural and molecular formulae, ions and polyatomic ions.
February,2026 1stWeek 1Feb, 2026	Guru RavidasJayanti,Sunday
5Feb, 2026	Chemical reactions, reaction stoichiometry, rates of reaction, rate constants.
8Feb, 2026	Sunday
2ndWeek 12Feb, 2026	Order of reactions, Arrhenious equation, Maxwell Boltzmann distributions, rate-determining steps, catalysis.
15 Feb, 2026	MahaShivratri , Sunday
3rdWeek 19Feb, 2026	Free-energy, entropy and enthalpy changes during reactions; kinetic versus thermodynamic controls of a reaction, reaction equilibrium (equilibrium constant).
22Feb,2026	Sunday
4thWeek 26Feb, 2026	Light and matter interactions (optical spectroscopy, fluorescence, bioluminescence).

March,2026 **1st Week** **1March – 8 March**	**Holi Break**
2ndWeek **12 March, 2026**	Chemical bonds (ionic, covalent, Van der Walls forces); States of matter - vapor pressure, surface tension, boiling and melting points, solubility, capillary action, suspensions, colloids and solutions.
15March, 2026	**Sunday**
3rdWeek **19 March, 2026**	Acids, Bases and pH - Arrhenious theory, Ionic product of water, weak acids and bases, conjugate acid-base pairs, buffers.
21March, 2026 **22March, 2026** **23March, 2026**	**Id-ul-Fitr** **Sunday** **ShaheediDiwas / Martyrdom day of Bhagat Singh/Rajguru&Sukhdev**
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
31March, 2026	**MahavirJayanti**
April,2026 1st Week **2April, 2026**	Types of organic reactions (Substitution, Addition, Elimination, Rearrangement etc.).
5April,2026	**Sunday**
2ndWeek **6 April-11April**	**Sessional Exams**
12April,2026	**Sunday**
3rdWeek **16 April, 2026**	Concept of isomerism: Types of isomerism, Optical isomerism, elements of symmetry, molecular chirality, enantiomers, chiral and achiral molecules.
14April,2026 **19April,2026**	**Dr. B.R.AmbedkarJayanti/Vaisakhi** **ParshuramJayanti /AkshayTirtiya, Sunday**
4thWeek **23April, 2026**	Geometric isomerism: Configuration of geometric isomers.
26April,2026	**Sunday**
5thWeek **30 April, 2026**	Cis-Trans nomenclature. Redox reactions and electrochemistry - oxidation-reduction reactions.
May, 2026 **2nd Week** **6 May, 2026 Onwards**	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester (January to May, 2026)

Name of the Teacher – Dr. Twinkle Sugla and Dr. Preeti Sharma
Class – M.Sc. 1st Year, Sem II (Biotechnology)
Subject – Genetic Engineering
Paper – M24-BTY-201

3rd Week **12, 14, 16 Jan, 2026**	Genetic Engineering : Introduction and scope of Genetic Engineering, Miles stones in Genetic engineering. Polymerase Chain Reaction: Concept, Basic PCR reaction, Factors affecting the PCR.
18 Jan, 2026	**Sunday**
4th Week **19, 21, 23 Jan, 2026**	Nucleic Acids: Purification of total cell DNA, plasmid DNA. Types of PCR (RT- PCR, Real time PCR, Allele specific PCR, Multiplex PCR), Applications of PCR.
23 Jan, 2026 **25 Jan, 2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ Basant Panchmi** **Sunday** **Republic Day**
5th Week **28, 30 Jan, 2026**	Purification of phage DNA and Yield Analysis. Applications of PCR.
Feb, 2026 1st Week **1 Feb, 2026**	**Guru Ravidas Jayanti , Sunday**
2, 4, 6 Feb, 2026	Nucleic acid blotting and hybridization. DNA Sequencing: Rapid DNA sequencing techniques and stralegic details of range of methodologies e.g. Dideoxyribonucleotide chain termination, Chemical degradation.
8 Feb, 2026	**Sunday**
2nd Week **9, 11, 13 Feb, 2026**	Manipulation of purified DNA: DNA modiflng enzymes- Terminal deoxynucleotidyl transferase, Polynucleotide kinase, Alkaline phosphatase, Nucleases, Methylases. Automated DNA sequencing, Thermal cycle sequencing, Pyrosequencing
15 Feb, 2026	**Maha Shivratri , Sunday**
3rd Week **16, 18, 20 Feb, 2026**	Restriction Endonucleases- Host controlled restriction and modification, Nomenclature, types, Recognition sequence! blunt and sticky ends, applications. Site Directed Mutagenesis: Oligonucleotide directed mutagenesis, PCR amplified oligonuclcotide directed mutagenesis, Random mutagenesis with degenerate oligonucleotide primers / nucleotide analogs.
22 Feb, 2026	**Sunday**
4th Week **23, 25, 27 Feb, 2026**	Ligases- E. coli andT4 DNA ligases, Linker, Adaptor, Homopolymer tailing. Gene expression and Regulation studies: Primer extension, Sl mapping, Gel retardation assay, Deletion analysis.

March, 2026 **1st Week** **1 March – 8 March**	**Holi Break**
2nd Week **9, 11, 13 March, 2026**	Gene Cloning Vectors: General features, Types of cloning vectors- Plasmid Reporter genes, DNA foot printing, Modification interference assays.
15 March, 2026	**Sunday**
3rd Week **16, 18, 20 March, 2026**	Types of cloning vectors- Bacteriophage HRT, HART.
21 March, 2026 **22 March, 2026** **23 March, 2026**	**Id-ul-Fitr** **Sunday** **Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4th Week **25, 27 March, 2026**	Types of cloning vectors- Phagemid, Cosmid. Manipulation of gene expression in prokaryotes: Problems with production of recombinant proteins in E coii, Optimizing expression of foreign genes in E. coli- Strong and regulatory promoters, Codon usage.
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
5th Week **30 March, 2026**	Fusion proteins. Increasing protein stability and secretion, Translation expression vectors. Protease deficient host strains.
31 March, 2026	**Mahavir Jayanti**
April, 2026 1st Week **1, 3 April, 2026**	Types of cloning vectors- Artificial chromosomes (YAC, BAC, PAC). Heterologous protein production in Eukaryotes: Saccharomyces cerevisiae and Pistia postoris expression systems.
5 April, 2026	**Sunday**
2nd Week **6 April - 11 April**	**Sessional Exams**
12 April, 2026	**Sunday**
3rd Week **13, 15, 17 April, 2026**	Baculovirus Insect cell expression systems, Mammalian cell expression system. Tramformation oI E. coli: Concept, Selection of transformed cells.
14 April, 2026 **19 April, 2026**	**Dr. B.R.Ambedkar Jayanti/Vaisakhi** **Parshuram Jayanti /Akshay Tirtiya , Sunday**
4th Week **20, 22, 24 April, 2026**	Identification of rccombinants (bacteria and phages) Cloning of Specific Gene: Direct selection.
26 April, 2026	**Sunday**
5th Week **27, 29 April, 2026**	Identification of specific clone from a gene library-genomic library.

May, 2026 **1st Week** **1 May, 2026**	cDNA synthesis and cloning-Properties of cDNA.
3 May, 2026	**Sunday**
2nd Week **4 May, 2026**	mRNA enrichment, cDNA library. REVISION
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester
(January to May, 2026)

Name of the Teacher – Dr. Twinkle Sugla
Class – M.Sc. 1st Year, Sem II (Biotechnology)
Subject – Plant Cell & Tissue Culture
Paper – M24-BTY-103

3rd Week **15, 16, 17 Jan, 2026**	lntroduction to plant cell tissue culture and historical perspective. Laboratory organization setup (R & D level and industrial level); Aseptic manipulations and bi,o-safety aspects in PTC; Culture media components, preparation and development/formulation of media for new plant system.
18 Jan, 2026	**Sunday**
4th Week **22, 23, 24 Jan, 2026**	Callus culture: characteristics, significance and limitations; Initiation and maintenance of cell cultures: static techniques of single cell culture, suspension culture and types, assessment of growth and viability of cultured cells.
23 Jan, 2026 **25 Jan, 2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ Basant Panchmi** **Sunday** **Republic Day**
5th Week **29, 30, 31 Jan, 2026**	Organogenesis and factors influencing organogenesis. Somatic embryogenesis: process of somatic embryos production.
February, 2026 **1st Week** **1 Feb, 2026**	**Guru Ravidas Jayanti , Sunday**
5, 6, 7 Feb, 2026	Factors influencing Somatic embrogenesis and its importance in plant breeding and propagation. Production of synthetic seeds.
8 Feb, 2026	**Sunday**
2nd Week **12, 13, 14 Feb, 2026**	Large scale plant micropropagation - technical stages of Micropropagation. Applications and limitations of micropropagation.
15 Feb, 2026	**Maha Shivratri , Sunday**
3rd Week **19, 20, 21 Feb, 2026**	Meristem and Shoot tip culture; Methods of production of pathogen free plants and their limitations. Methods of indexing of virus free plants.
22 Feb, 2026	**Sunday**
4th Week **26, 27, 28 Feb, 2026**	Somaclonal variations: Genetic and epigenetic, molecular basis of variation, limitations and their significance in plant breeding

March, 2026 **1st Week** **1 March – 8 March**	**Holi Break**
2nd Week **12, 13, 14 March, 2026**	*In vitro* production of haploid plants - Androgenesis (anther and pollen culture) and Gynogenesis.
15 March, 2026	**Sunday**
3rd Week **19, 20 March, 2026**	Factors affecting androgenesis; Oontogeny of androgenesis. Diploidization of haploid plants. Significance and uses of haploids in agriculture.
21 March, 2026 **22 March, 2026** **23 March, 2026**	**Id-ul-Fitr** **Sunday** **Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4th Week **26, 27, 28 March, 2026**	Wide hybridization and embryo rescue technique. Protoplast culture -Isolation, culture.
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
31 March, 2026	**Mahavir Jayanti**
April, 2026 **Ist Week** **2, 3, 4 April, 2026**	Somatic hybridization- Fusion of protoplast, selection of fusion products, assessment of somatic hybrid plants. TEST
5 April, 2026	**Sunday**
2nd Week **6 April - 11 April**	**Sessional Exams**
12 April, 2026	**Sunday**
3rd Week **16, 17, 18 April, 2026**	Production of cybrids, applications of protoplast culture and somatic hybridization in the improvement of crop plants.
14 April, 2026 **19 April, 2026**	**Dr. B.R.Ambedkar Jayanti/Vaisakhi** **Parshuram Jayanti /Akshay Tirtiya , Sunday**
4th Week **23, 24, 25 April, 2026**	In vitro germplasm conservation and cryopreservation.
26 April, 2026	**Sunday**
5th Week **27 April - 30 April**	TEST
May, 2026 **1st Week** **1 May – 2 May 2026**	Discussion and Revision.
3 May, 2026	**Sunday**
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester (January to May, 2026)

Name of the Teacher– Manpreet Kaur

Class – B. Sc. Life Science Semester VI (Aided and SFS)

Subject– Microbial Technology

Paper– B23-BTY-601

3rdWeek **15 Jan–17 Jan, 2026**	Scopes, application and challenges. Biology of industrial micro- organisms
18 Jan,2026	**Sunday**
4thWeek **22, 24 Jan, 2026**	Isolation and preservation of industrially important microorganisms. **+ Test**
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ BasantPanchmi** **Sunday** **Republic Day**
5thWeek **29 Jan–31 Jan, 2026**	Fermentation system; batch and continuous system, fed batch system, multistage system. Solid state fermentation and its applications.
February,2026 **1stWeek** **1Feb, 2026**	**Guru Ravidas Jayanti,Sunday**
5 Feb – 7 Feb, 2026	Use of mutation selection and recombination techniques.
8Feb, 2026	**Sunday**
2ndWeek **12 Feb – 14 Feb, 2026**	Fermentation raw materials: Media for industrial fermentations; criteria used in media formulation.

15 Feb, 2026	**MahaShivratri , Sunday**
3rdWeek **19 Feb - 21 Feb, 2026**	Fermenter /bioreactor design and operation Types of fermenter, stirred tank reactor, bubble column reactor, airlift reactor, packed bed reactor, fluidized bed reactor and trickle bed reactor.
22 Feb, 2026	**Sunday**
4thWeek **26 Feb -28 Feb, 2026**	Microbial production of industrial chemicals: ethanol, citric acid, acetic acid, gluconic acid, glycerol, acetone and butanol. **+ TEST**

March,2026 **1st Week** **1March – 8 March**	**Holi Break**
2ndWeek **12 March– 14 March, 2026**	Microbial inoculants: Food starter cultures; baker's yeast, starter cultures for the dairy industry.
15March, 2026	Sunday
3rdWeek **19, 20 March, 2026**	Meat starter cultures and Microbial inoculants **+ TEST**
21March, 2026 **22March, 2026** **23March, 2026**	**Id-ul-Fitr** **Sunday** **Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru&Sukhdev**
4thWeek **27, 28 March, 2026**	Down-stream processing: separation processes for microbial cells and other solids, cell disruption, centrifugation, solvent recovery, drying and crystallization.
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
5thWeek **30 March, 2026**	Recovery schemes for non-volatile metabolites, biomass. **+TEST**
31March, 2026	**Mahavir Jayanti**

April,2026 1st Week **2 April–4 April, 2026**	Industrial microorganisms, growth metabolism regulation, substrate assimilation/ product formation. **REVISION + PYQS**
5April,2026	**Sunday**
2ndWeek **6 April-11April, 2026**	**Sessional Exams**
12April,2026	**Sunday**
3rdWeek **16 April - 18April, 2026**	Agitation and aeration in a reactor, mass transfer. Foam formation and control.
14April,2026 **19April,2026**	**Dr. B. R. Ambedkar Jayanti / Vaisakhi** **Parshuram Jayanti /Akshay Tirtiya, Sunday**
4thWeek **23 April - 25 April, 2026**	Single cell protein (SCP) production, Extracellular polysaccharides and enzymes. **+TEST**
26April,2026	**Sunday**
5thWeek **30 April, 2026**	Microbial transformation of steroids and sterols
May,20261st Week **1May – 2 May 2026**	**REVISION + DISCUSSIONS**
3May,2026	**Sunday**
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V.COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester
(January to May, 2026)

Name of the Teacher– Ms. Manpreet Kaur
Class – M.Sc. Semester IV
Subject– Animal and Medical Biotechnology
Paper– M24-BTY-401

1st Week **1 Jan, 2026**	Introduction to Animal Biotechnology-Scope, global perspective and new horizons, economically important livestock breeds
2nd Week **5 Jan – 8 Jan, 2026**	Model animals in animal biotechnology and genetic engineering. DNA fingerprinting in Forensic sciences. **+ TEST**
3rdWeek **12 Jan–15 Jan, 2026**	An overview of animal cell culture techniques-cell lines, cell culture, cell viability assays, cryopreservation of cells. **+ TEST**
18 Jan,2026	**Sunday**
4thWeek **19 Jan–22 Jan, 2026**	Transgenic Animals Principles of transgenesis; Methods of gene transfer DNA microinjection, Retroviral and embryonic stem cell methods, Electroporation, Biolistic, lipofection; selectable markers.
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ Basant Panchmi** **Sunday** **Republic Day**
5thWeek **27Jan–29 Jan, 2026**	Application of transgenic animals-mice, sheep, pigs, goats, cows, fish. Hybrid Human- Mouse Monoclonal Antibody, Anticancer Antibodies), Enzymes (DNase, Alginate Lyase, Alpha 1 Antitrypsin, Phenyl Ammonia Lyase, Glycosidases)

February,2026 **1stWeek** **1Feb, 2026**	**Guru Ravidas Jayanti, Sunday**
2Feb– 5 Feb, 2026	Molecular pharming, Case studies of transgenic animal models gene therapy for SCID, Cancer, Neurological disorders, Ethical issues. **+ TEST**
8Feb, 2026	**Sunday**
2ndWeek **9 Feb – 12 Feb, 2026**	Concept of animal cloning, cloning from embryonic and adult cells, Somatic cell nuclear transfer technique, Embryo splitting.
15 Feb, 2026	**MahaShivratri , Sunday**
3rd Week **16 Feb - 19 Feb, 2026**	Creation of Dolly, Molly and Polly, challenges and limitations; applications of animal cloning. **+TEST + DOUBT CLEARENCE**
22 Feb, 2026	**Sunday**
4th Week **23 Feb- 26 Feb, 2026**	Embryo transfer Technology Definition, Superovulation, artificial insemination, In vitro fertilization, embryo evaluation.
March, 2026 1st Week **1March – 8 March, 2026**	**Holi Break**
2nd Week **9 March– 12 March, 2026**	Embryo transfer in cattle. Applications of embryo transfer technology. **+TEST**
15 March, 2026	**Sunday**
3rd Week **16 March–19 March, 2026**	Stem Cell Technology, Definition, classification-adult and embryonic stem cells; hematopoietic, mesenchymal and neural stem cells and properties.
21March, 2026 **22March, 2026** **23March, 2026**	**Id-ul-Fitr** **Sunday** **Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4th Week **24, 25 March, 2026**	Characteristics of pluripotent and multipotent stem cells, induced pluripotent stem cells, therapeutic cloning for embryonic stem cells, stem cell based therapies and clinical applications.
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
5thWeek **30 March, 2026**	Nucleic Acid Therapeutics -Antisense RNA, Ribozyme, Aptamers, DNAzymes, RNAi, Zinc Finger Nucleases. **+TEST**
31March, 2026	**Mahavir Jayanti**

April, 2026 1st Week 1, 2 April, 2026	Protein Therapeutics-Pharmaceuticals (Tumour Necrosis Factor, Human Growth Hormone, insulin, leptin, Interferon, interleukin- 10 etc), Recombinant Antibodies - Human Monoclonal Antibodies. **+ REVISION**
5April,2026	**Sunday**
2ndWeek 6 April-11April, 2026	**Sessional Exams**
12April,2026	**Sunday**
3rdWeek 13, 15, 16 April, 2026	Gene Therapy- Definition, Types of gene therapy-Gene augmentation, gene inhibition, Gene editing; in vitro and in vivo gene therapy, viral and nonviral vectors for gene transfer.
14April,2026 19April,2026	**Dr. B.R.Ambedkar Jayanti/Vaisakhi Parshuram Jayanti /Akshay Tirtiya, Sunday**
4thWeek 20April - 23 April, 2026	Nanobiotechnology- Introduction, types and synthesis of Nanoparticles Protein based nanostructures, applications of nanoparticles – Nanobiosensors, drug and gene delivery, disease diagnostics and therapy Risk potential of nanomaterials. **+TEST**
26April,2026	**Sunday**
5thWeek 27April - 30 April, 2026	Pharmacogenomics-concept, Role of Genetic Variations in different responses of individuals to drugs, Pharmacogenomics and industry, personalized Medicine.
3May,2026	**Sunday**
2ndWeek 4, 5 May, 2026	**REVISION + DOUBT CLEARANCE**
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V.COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester

(January to May, 2026)

Name of the Teacher– Ms. Sonika Breta and Ms. Manpreet Kaur
Class – M.Sc. II Semester IV
Subject–Food Biotechnology
Paper–M24-BTY-403

1st Week **2 Jan, 3 Jan, 2026**	Biotech foods and supplements: Introduction to food biotechnology and related industries.
2nd Week **8 Jan–10 Jan, 2026**	Transgenic plant foods: carbohydrates, proteins, vitamins nutritional quality improvement of the food crops by genetic engineering, safety of GM food crops.
3rdWeek **15 Jan- 17 Jan, 2026**	Dietary supplements; Single cell Protein (SCP) production, mushrooms production technology. **+TEST**
18 Jan,2026	**Sunday**
4thWeek **22 Jan–24 Jan, 2026**	large scale production of algae and yeast Food additives & preservation techniques: Food additives definitions
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ Basant Panchmi** **Sunday** **Republic Day**
5thWeek **29Jan–31 Jan, 2026**	Need for food additives, classification and functions of different additives: thickeners. **+ TEST**
Feb., 2026 1st Week **1Feb, 2026**	**Guru Ravidas Jayanti, Sunday**
5Feb– 7Feb, 2026	Antioxidants, colouring agents, flavouring agents, sweeteners, emulsifiers, flour improvers. **+TEST + DOUBT CLEARTENCE**
8Feb, 2026	**Sunday**
2ndWeek **12Feb-14Feb, 2026**	Probiotics: Production & importance of probiotics;
15 Feb, 2026	**Maha Shivratri , Sunday**
3rd Week **19Feb-21 Feb, 2026**	Preservation techniques: refrigeration & freezing, dehydration, heating, irradiation.
22Feb,2026	**Sunday**
4thWeek **26Feb-28Feb, 2026**	Antimicrobial agents used in food preservation. **+ TEST**

March,2026 1st Week 1March – 8 March, 2026	**Holi Break**
2ndWeek 12 March– 14 March, 2026	Fermented foods and Food Packaging: Cheese production technologies Fermented foods of India: dairy products, cereal and legume foods, vegetables/fruits, meat and fish.
15March, 2026	**Sunday**
3rdWeek 19March–20 March, 2026	Introduction to Food Packaging: definition, levels of food packaging, factors involved in the evolution and selection of a food package.
21March, 2026 22March, 2026 23March, 2026	**Id-ul-Fitr Sunday Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4thWeek 26March–28 March, 2026	Types of packaging materials and their functioning properties. Aseptic packaging of foods. Sterilization techniques of packaging materials.
26 March, 2026 29 March, 2026	**Ram Navmi Sunday**
31March, 2026	**Mahavir Jayanti**
April,2026 1st Week 2 April–4 April, 2026	Methods for the microbiological examination of foods. Advantages/ functions and disadvantages associated with packaging of foods.
5April, 2026	**Sunday**
2ndWeek 6 April-11April, 2026	**Sessional Exams**
12April, 2026	**Sunday**
3rd Week 16 April-18April, 2026	Food Safety and Quality Control: Introduction to concepts of food safety and food quality assurance. **+ TEST**
14April,2026 19April,2026	**Dr. B.R.Ambedkar Jayanti/Vaisakhi Parshuram Jayanti /Akshay Tirtiya, Sunday**
4thWeek 23 April - 25 April, 2026	Food adulteration, nature of adulterants, methods of evaluation of food adulterants. Toxic constituents. Hazard analysis and critical control point (HACCP).
26April,2026	**Sunday**
5thWeek 30 April, 2026	Role of international regulatory agencies: USFDA and International Organization for Standards (ISO). Indian food laws and standards: Prevention of Food Adulteration (PFA) Act, Fruit Products Order (FPO), Meat Products Order (MPO), Cold Storage Order (CSO).

May,20261st Week 1May – 2 May, 2026	Role of AGMARK Standard, Bureau of Indian Standards (BIS) and Food Safety and Standards Authority of India (FSSAI).
3May,2026	**Sunday**
2ndWeek 4May-5May, 2026	**REVISION + DOUBT CLEARANCE**
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester
(January to May, 2026)

Name of the Teacher– Ms. Sonika Breta
Class – B.sc Ist Biotechnology, Sem-II
Subject–General Microbiology
Paper–B23-BTY-201

3rdWeek **12,13,14 Jan**	History and evolution of microbiology with special reference to the contribution of the scientists: A. V. Leeuwenhoek, Louis Pasteur, Robert Koch, Edward Jenner and Alexander Fleming.
18 Jan,2026	**Sunday**
4thWeek **19,20,21 Jan**	Introduction to classification of microorganisms: Microbial taxonomy, different criteria including molecular approaches, Microbial phylogeny and current classification of bacteria.
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ BasantPanchmi** **Sunday** **Republic Day**
5thWeek **27,28 Jan**	Stains and staining procedures: Acidic, basic and neutral stains, Gram staining, Acid fast staining, Flagella staining, Endospore staining.
February,2026 **1stWeek** **1Feb, 2026**	**Guru RavidasJayanti,Sunday**
2,3,4 Feb	Distribution and characterization: Prokaryotic and Eukaryotic cells, Morphology and cell structure of major groups of microorganisms eg. Bacteria, Algae, Fungi and Protozoa.
8Feb, 2026	**Sunday**
2ndWeek **9,10,11 Feb**	Cultivation and Maintenance of microorganisms: Nutritional requirements of microorganisms
15 Feb, 2026	**MahaShivratri , Sunday**
3rdWeek **16,17,18 Feb**	Microbial growth: Study of growth curve, generation time, quantitative measurement of growth and factors affecting growth of bacteria.
22Feb,2026	**Sunday**
4thWeek **23,24,25 Feb**	Viruses: General characteristics of viruses, difference between virus and typical microbial cell, structure, different shapes and symmetries with one example of each type.

March,2026 **1st Week** **1March – 8 March**	**Holi Break**
2ndWeek **9,10,11 March**	Control of microorganisms: By physical and chemical antimicrobial agents including antibiotics and their mode of action.
15March, 2026	**Sunday**
3rdWeek **16,17,18 March**	Food and Water Microbiology: Bacterial pollutants of water, coliforms and non coliforms.
21March, 2026 **22March, 2026** **23March, 2026**	**Id-ul-Fitr** **Sunday** **ShaheediDiwas / Martyrdom day of Bhagat Singh/Rajguru&Sukhdev**
4thWeek **24,25 March**	Microbiology of fermented Foods. Microbial ecology: Microenvironment & Niche. Soil microbiology: .
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
5thWeek **30 March**	Sewage composition and its disposal. Microbial spoilage of foods. Major food-borne infections and intoxications.
31March, 2026	**MahavirJayanti**
April,2026 1st Week **1April–4 April**	Classification of viruses on the basis of nucleic acids, phage and animal cell viruses, example of each and their importance.
5April,2026	**Sunday**
2ndWeek **6 April-11April**	**Sessional Exams**
12April,2026	**Sunday**
3rdWeek **13,14,15 April**	Bacterial Reproduction: Transformation, Transduction and Conjugation. Endospores and sporulation in bacteria.
14April,2026 **19April,2026**	**Dr. B.R.AmbedkarJayanti/Vaisakhi** **ParshuramJayanti /AkshayTirtiya, Sunday**
4thWeek **20,21,22 April**	Brief idea of lytic cycle and lysogeny.
26April,2026	**Sunday**
5thWeek **27,28,29 April**	Types & functions of microorganisms in soil

May,2026 **1st Week** **1May – 2 May2026**	Methods of isolation, purification and preservation of microorganisms.
3May,2026	**Sunday**
2ndWeek **4May-5May**	**Test & Revision**
6 May, 2026 **Onwards**	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester

(January to May, 2026)

Name of the Teacher– Ms. Sonika Breta

Class – M.Sc. I Semester-II

Subject– Bioinformatics

Paper– M24-BTY-204

3rd Week **12,14,15 Jan, 2026**	Bioinformatics and Biological Databases: Central Dogma of Molecular Biology. Basics of Human Genome Project.
18 Jan, 2026	**Sunday**
4th Week **19,21,22 Jan, 2026**	Introduction, Goal, Scope, Applications of Bioinformatics. Introduction to Biological Databases and Information Retrieval Systems.
23 Jan, 2026 **25 Jan, 2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ Basant Panchmi** **Sunday** **Republic Day**
5th Week **28, 29 Jan**	Gene and Promoter Prediction: Categories of Gene Finding Programs, Gene Prediction in Prokaryotes.
February, 2026 1st Week **1 Feb, 2026**	**Guru Ravidas Jayanti , Sunday**
2 ,4, 5 Feb, 2026	Gene Prediction in Eukaryotes, Promoter and Regulatory Elements in Prokaryotes, Promoter and Regulatory Elements in Eukaryotes, Prediction Algorithms.
8 Feb, 2026	Sunday
2nd Week **9,11,12 Feb, 2026**	Structural Bioinformatics: Introduction to Protein Structure Database.
15 Feb, 2026	**Maha Shivratri , Sunday**
3rd Week **16,18,19 Feb, 2026**	Protein Structural Visualisation, Protein Structure Comparison, Protein Structure Classification. Methods of Secondary and Tertiary Structure.
22 Feb, 2026	**Sunday**
4th Week **23 ,25, 26 Feb, 2026**	Prediction for Globular Proteins: Homology Modelling, Threading and Fold Recognition, Ab Initio Protein Structural Predictions.

March, 2026 **1st Week** **1 March – 8 March, 2026**	**Holi Break**
2nd Week **9,11,12 March, 2026**	Molecular Phylogenetics: Molecular Evolution and Molecular Phylogenetics, Terminology: Gene Phylogeny versus Species Phylogeny.
15 March, 2026	**Sunday**
3rd Week **16, 18, 19 March, 2026**	Genomics and Proteomics: Genome Mapping, Genome Sequence Assembly, Genome Annotation, Comparative Genomics, Functional Genomics.
21 March, 2026 **22 March, 2026** **23 March, 2026**	**Id-ul-Fitr** **Sunday** **Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4th Week **25, 26 March, 2026**	Introduction to Drug Discovery, Introduction to Pairwise Sequence Alignment: Evolutionary Basis, Sequence Homology versus Sequence Similarity.
26 March, 2026 **29 March, 2026**	**Ram Navmi** **Sunday**
5th Week **30 March, 2026**	Sequence Similarity versus Sequence Identity, scoring matrix. Database Similarity Searching: Exhaustive and Heuristic, Basic Local Alignment Search Tool.
31 March, 2026	**Mahavir Jayanti**
April, 2026 **1st Week** **1, 2 April, 2026**	BLAST, FASTA. Multiple Sequence Alignment: Exhaustive Algorithms, Heuristic Algorithms.
5 April, 2026	**Sunday**
2nd Week **6 April - 11 April, 2026**	**Sessional Exams**
12 April, 2026	Sunday
3rd Week **13, 15, 16 April, 2026**	Position- Specific Scoring II, III, I I I IV Matrices, Motifs and Domains, Regular Expressions, Protein Family Databases, Sequence Logos.
14 April, 2026 **19 April, 2026**	**Dr. B.R.Ambedkar Jayanti/Vaisakhi** **Parshuram Jayanti /Akshay Tirtiya, Sunday**
4th Week **20, 22, 23 April, 2026**	Sequence-Based Approaches, Microarray-Based Approaches, Comparison of SAGE and DNA Microarrays.
26 April, 2026	**Sunday**
5th Week **27, 29, 30 April, 2026**	Introduction to Proteomics, various tools and techniques, application/significance of Proteomics to mankind.

May, 2026 **1st Week** **1 May-2 May, 2026**	Forms of Tree Representation, Finding a True Tree. Distance-Based Methods, Character-Based Methods, Phylogenetic Tree Evaluation, Phylogenetic Programs.
3 May, 2026	**Sunday**
2nd Week **4 May- 5 May, 2026**	**Revision and PYQ.**
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester
(January to May, 2026)

Name of the Teacher– Ms. Chetna
Class – B.Sc.-II yr Biotechnology (Major)
Subject– Recombinant DNA Technology
Paper– B23-BTY- 401

4thWeek **22,24 Jan 2026**	Introduction and scope of Genetic Engineering, Miles stones in Genetic engineering, Central role of E. coli in genetic engineering. Purification of total cell DNA, plasmid DNA, phage DNA, Yield Analysis **Doubts and Revision**
23 Jan,2026 **25 Jan,2026** **26 Jan, 2026**	**Sir Chottu Ram Jayanti/ BasantPanchmi** **Sunday** **Republic Day**
5thWeek **29,30,31 Jan 2026**	Nucleic acid blotting- Blotting techniques, Southern blotting, northern blotting, western blotting Hybridization techniques- In-situ hybridization, FISH, DNA polymerase, Polynucleotide kinase, Alkaline phosphatase, Nucleases, Methylases, Terminal deoxynucleotidyl transferase.
February,2026 **1stWeek** **1Feb, 2026**	**Guru RavidasJayanti,Sunday**
5,6,7 Feb 2026	Reverse transcriptase, Restriction endonucleases (R.E.) Nomenclature, types of Restriction Enzymes, Host controlled restriction and modification, Recognition sequence. **Test and Revision**
8Feb, 2026	**Sunday**
2ndWeek **12,13,14 Feb 2026**	Blunt and sticky ends, applications, Ligases, Linker, Adaptor, Homopolymer tailing, Nick translation system, General features,Types of cloning vectorsPlasmid, bacteriophage, phagemid, cosmid. **Doubts and Revision**
15 Feb, 2026	**Maha Shivratri , Sunday**
3rdWeek **19,20,21 Feb 2026**	Plasmid Biology: Structural and Functional Organization of Plasmids, Plasmid Replication, Stringent and Relaxed Plasmids,Incompatibility of Plasmid Maintenance, Ti plasmids; Biology of Bacteriophage Lambda: Lambda Phage as a natural in vivo vector, in vitro construction of lambda vector **Test and Revision**
22Feb,2026	**Sunday**
4thWeek **26,27,28 Feb 2026**	Bacteriophage (ssDNA Phages), Cauliflower Mosaic Virus, Artificial chromosomes (YAC, BAC, PAC) Construction of recombinant DNA.,Preparation competent cell, Episomes Gene transfer using Plasmids and other cloning vectors.

March,2026 1st Week 1March – 8 March	**Holi Break**
2ndWeek 12,13,14 March 2026	Techniques of gene transfer: Microinjection, Electroporation, Ultrasonication. Transformation, Transfection, Selection of transformed cells, Selection and Screening of Recombinants (bacteria and phages).
15March, 2026	**Sunday**
3rdWeek 19,20 March 2026	Cloning strategies in yeast, E. coli and B. subtilis; Direct selection, Preparation and comparison of Genomic and cDNA library, Identification from a gene-genomic library, cDNA library, Screening Strategies. **Revision**
21March, 2026 22March, 2026 23March, 2026	**Id-ul-Fitr Sunday Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru & Sukhdev**
4thWeek 26,27,28 March 2026	Probes, Colony and plaque hybridization, Polymerase Chain reaction: Principle and applications of Polymerase chain reaction (PCR), primer-design, and RT-(Reverse transcription) PCR. **Test and Revision**
26 March, 2026 29 March, 2026	**Ram Navmi Sunday**
31March, 2026	**Mahavir Jayanti**
April,2026 1st Week 2,3,4 April 2026	Applications of Genetic Engineering: Genetic engineering in animals, Genetic engineering in plants.
5April,2026	**Sunday**
2ndWeek 9,10,11April 2026	**Sessional Exams**
12April,2026	**Sunday**
3rdWeek 16,17,18April	Therapeutic products produced by genetic engineering-blood proteins, human hormones, immune modulators and vaccines.
14April,2026 19April,2026	**Dr. B.R. Ambedkar Jayanti/ Vaisakhi Parshuram Jayanti /Akshay Tirtiya, Sunday**
4thWeek 23,24,25 April 2026	DNA Fingerprinting, Gene therapy, Restriction mapping, Genome mapping.
26April,2026	**Sunday**
5thWeek 30 April 2026	**Test and Revision**
May,20261st Week 1,2 May2026	**Doubts and Revision**
3May,2026	**Sunday**
6 May, 2026 Onwards	**University Examinations**

KUMARI VIDYAVATI ANAND D.A.V. COLLEGE FOR WOMEN, KARNAL

Lesson Plan for the Even Semester
(January to May, 2026)

Name of the Teacher– Ms. Chetna
Class– B.Voc. FSQC (Sem-II)
Subject– Microbiology -II
Paper– B23-FTQ-204

February,2026 **1stWeek** **2Feb 2026**	Basic aspects and scope of food microbiology; Intrinsic and extrinsic factors that affect microbial growth in foods; Microbial spoilage of Milk, fruits, fruit juices, vegetables.
8Feb, 2026	**Sunday**
2ndWeek **9Feb 2026**	Microbial spoilage of cereals, meat, poultry, sea foods; Carbonated soft drinks, canned foods, chemical changes caused by microorganisms, control of spoilage.
15 Feb, 2026	**Maha Shivratri , Sunday**
3rdWeek **16 Feb 2026**	Food Fermentations, traditional fermented foods of India and other Asian countries, Probiotics, prebiotics and synbiotics.
22Feb,2026	**Sunday**
4thWeek **23 Feb 2026**	Food preservation-Physical methods, Chemical preservatives and natural antimicrobial compounds, biology-based preservation system. **Test and Revision**
March,2026 **1st Week** **1March – 8 March**	**Holi Break**
2ndWeek **9 March 2026**	Control of microorganisms by use of low and high temperature, asepsis, water activity,drying, preservatives, radiation and pressure for control of microorganisms.
15March, 2026	**Sunday**
3rdWeek **16March 2026**	Microbiology of milk and milk products; Sources of contamination, spoilage and prevention.
21March, 2026 **22March, 2026** **23March, 2026**	**Id-ul-Fitr** **Sunday** **Shaheedi Diwas / Martyrdom day of Bhagat Singh/Rajguru&Sukhdev**
4thWeek **26 March, 2026** **29 March, 2026**	**Ram Navmi** **Sunday**
5thWeek **30 March 2026**	Microbiology of fruits and vegetables; Cereal and cereal products; Meat and meat products.
31March, 2026	**MahavirJayanti**

5April,2026	**Sunday**
2ndWeek **6 April-11April**	**Sessional Exams**
12April,2026	**Sunday**
3rdWeek **13 April 2026**	Microbiology of Fish and other sea foods; Poultry and eggs. Sugar and sugar products, salts and spices.
14April,2026 **19April,2026**	**Dr. B.R.AmbedkarJayanti/Vaisakhi** **ParshuramJayanti /AkshayTirtiya, Sunday**
4thWeek **20April 2026**	Food poisoning caused by bacteria: Salmonella, Staphylococcal poisoning. Sources, incubation period, mechanism of action. **Test and Revision**
26April,2026	**Sunday**
5thWeek **27April 2026**	**Doubts and Revision**
3May,2026	**Sunday**
2ndWeek **4May 2026**	**Doubts and Revision**
6 May, 2026 **Onwards**	**University Examinations**