

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- B.Sc. I (Minor)

Subject- Laboratory Techniques & Practices

Paper- B23-BTY-103

August, 2023 1st Week 3 Aug	Lab rules and safety measures to be taken in Biotechnology Lab. Commonly used equipments for Biotechnological work- Laminar air-flow
6 Aug, 2023	Sunday
2nd Week 10 Aug	Commonly used equipments for Biotechnological work- Centrifuge, pH meter, Incubator, Fermenter, Colony-counter
13 Aug, 2023	Sunday
3rd Week 17 Aug	Biotechnology Lab equipments-Autoclave, Inoculating loop and needle Colorimeter and spectrophotometer.
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4th Week 24 Aug	Use of Bright field microscope in Biotechnology Lab
27 Aug, 2023	Sunday
5th Week 31 Aug	Sterilization techniques followed in biotechnology lab-dry and wet sterilization techniques
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- B.Sc. I (Minor)

Subject- Laboratory Techniques & Practices

Paper- B23-BTY-103

September, 2023	
3 Sept, 2023	Sunday
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmashtami Sunday
3rd Week 14 Sept	Preferred method of sterilization for different materials Biological indicators for checking the efficiency of sterilization process
17 Sept, 2023	Sunday
4th Week 21 Sept	Evaluation of different disinfectants and antiseptics and their usage. Preparation of cotton plugs and different types of culture media for growth of microorganisms, animal and plant cell culture.
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheedi Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5th Week 28 Sept	Preparation of dilutions and isolation of micro-organisms from air, water and soil. Sub- culturing/ Picking off technique- streaking, pour-plate, spread plate methods.

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- B.Sc. I (Minor)

Subject- Laboratory Techniques & Practices

Paper- B23-BTY-103

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 5 Oct	Qualitative and quantitative estimation of various biomolecules- sugars, proteins Determination of various metabolites in given biological samples;
8 Oct, 2023	Sunday
2nd Week 12 Oct	Preparation of standard curve, buffers, normal, molar, percent solutions, buffer solutions and determination of their pH
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 19 Oct	Paper Chromatography, Thin-layer Chromatography
22 Oct, 2023	Sunday
4th Week 26 Oct	Sessional Exams
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
25 Oct – 4 Nov, 2023	Sessional Exams
November, 2023 1st Week 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
2nd Week 9 Nov	Two-dimensional Chromatography, Paper electrophoresis
10 Nov - 16 Nov, 2023	Diwali Break
19 Nov, 2023	Sunday
4th Week 23 Nov	Revision
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- B.Sc. II (Biotechnology)

Subject- Immunology

Paper- VI

August, 2023 1st Week 1,3 Aug	Immunology: Introduction, History and Scope. Terminology of immune system. Immunity: Definition, types of Immunity- Innate, Adaptive/acquired (active, passive,
6 Aug, 2023	Sunday
2nd Week 8, 10 Aug	Natural/artificial, Humoral and Cell mediated immunity. Features of Immune Response –memory, cell specificity/diversity, recognition of self and non-self.
13 Aug, 2023	Sunday
3rd Week 18 Aug	Cells of the Immune System – B and T cells (types and receptors), Null cells, Monocytes, Polymorphs.
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4th Week 22, 24 Aug	Organs of the Immune System: Primary and Secondary Lymphoid organs- Thymus, Spleen, Lymph nodes.
27 Aug, 2023	Sunday
5th Wee 29, 31 Aug	Antigens: Concept, Types of Antigens, Antigenic determinants/epitopes, Hapten. Antigen and Immunogen.
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- B.Sc. II (Biotechnology)

Subject- Immunology

Paper- VI

3 Sept, 2023	Sunday
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmastami Sunday
3rd Week 12, 14 Sept	Antigenicity and Immunogenicity. Factors affecting antigenicity. Antibodies: Structure, Types/Classes, properties and functions of immunoglobulins.
17 Sept, 2023	Sunday
4th Week 19, 21 Sept	Production of antibodies. Antibody diversity (a brief account only). Antigen – Antibody Interactions: Binding sites, Binding forces, Affinity, Avidity, Cross reactions.
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheedee Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5th Week 26, 28 Sept	Precipitation and Agglutination reactions, RIA, ELISA techniques.

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- B.Sc. II (Biotechnology)

Subject- Immunology

Paper- VI

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 3, 5 Oct	Primary and Secondary immune response – B cells in antibody formation (differentiation, maturation and activation of B cells). Role of MHC molecules, Antigen presenting cells. Factors influencing antibody formation.
8 Oct, 2023	Sunday
2nd Week 10, 12 Oct	Cell mediated immunity- Cells involved in CMI, (T-cell subset and surface markers, T-dependent and T-independent antigens Major Histocompatibility Complex- Class I and Class II MHC molecules, functions of MHC
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 17, 19 Oct	Recognition of antigens by T-cells, role of MHC and MHC restriction, Cytokines and lymphokines, functions of cell mediated immunity.
22 Oct, 2023	Sunday
4th Week 26 Oct	Sessional Exams
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5th Week 31 Oct	Complement system: Structure, components, properties and functions.
25 Oct – 4 Nov, 2023	Sessional Exams

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- B.Sc. II (Biotechnology)

Subject- Immunology

Paper- VI

November, 2023 1st Week 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
2nd Week 7, 9 Nov	Hypersensitivity and allergic reactions Autoimmunity, immunological tolerance.
10 Nov - 16 Nov, 2023	Diwali Break
19 Nov, 2023	Sunday
4th Week 21, 23 Nov	Vaccines: concept, types of vaccines- Inactivated, Attenuated and Recombinant vaccines (Peptide and DNA vaccines).
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- M.Sc. I

Subject- Biotechniques

Paper- BT-104

August, 2023 1 st Week	Admission Process
6 Aug, 2023	Sunday
2 nd Week	Admission Process
13 Aug, 2023	Sunday
3 rd Week 16, 17, 18, 19 Aug	Microfiltration, Ultrasonication, High pressure homogenization. Bead milling, Ultrafiltration, Diafiltration and their applications.
4 th Week 23, 24, 25, 26 Aug	Reverse osmosis, Lyophilization, Centrifugation- Principles of Sedimentation, centrifugation techniques and their applications.
27 Aug, 2023	Sunday
5 th Week 31Aug	Differential centrifugation, density gradient and ultracentrifugion techniques.
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- M.Sc. I

Subject- Biotechniques

Paper- BT-104

September, 2023 1st Week 1 Sept - 2 Sept	Light Microscopy- Magnification, Resolving power, numerical aperture, limit of resolution, Principles and applications of bright field Microscopy
3 Sept, 2023	Sunday
2nd Week 6, 8, 9 Sept	Phase-Contrast Microscopy, Fluorescence Microscopy, Scanning and Transmission Electron microscopy
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmastami Sunday
3rd Week 13, 14, 15, 16 Sept	Principles and applications of Paper, Thin layer, Gel filtration Chromatography, Ion-exchange, Affinity chromatography.
17 Sept, 2023	Sunday
4th Week 20, 21, 22 Sept	Principles and applications of, Gas liquid chromatography, High Pressure Liquid Chromatography (HPLC), Reversed Phase chromatography, Hydrophobic interaction chromatography.
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheed Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5th Week 27, 28, 29, 30 Sept	Electrophoresis: concept, factors affecting electrophoresis, Agarose gel electrophoresis, Pulse field gel electrophoresis, PAGE. SDS-PAGE, Isoelectric focussing, 2 Dimensional electrophoresis

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- M.Sc. I

Subject- Biotechniques

Paper- BT-104

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 4, 5, 6, 7 Oct	Spectroscopy: Principles of biophysical methods used for analysis of biopolymer structure- X-Ray diffraction
8 Oct, 2023	Sunday
2nd Week 11, 12, 13, 14 Oct	Fluorescence, UV-Visible, ORD/CD, NMR and ESR spectroscopy, Atomic absorption and atomic emission spectroscopy.
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 18, 19, 20, 21 Oct	Radioisotope Techniques: Radioactivity, units of radioactivity, radioactive decay, Rate of radioactive decay
22 Oct, 2023	Sunday
4th Week 25, 26, 27 Oct	Measurement of radioactivity- Geiger counter, Liquid Scintillation counting, Autoradiography
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- M.Sc. I

Subject- Biotechniques

Paper- BT-104

November, 2023 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
1st Week 2, 3, 4 Nov	Revision
2nd Week 8, 9 Nov	Effect of radiations on biological system, Cerenkov radiations, Tracer technique-principle and applications
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 17, 18 Nov	Revision Sessional Examination
19 Nov, 2023	Sunday
4th Week 22, 23, 24 Nov	Revision Sessional Examination
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- M.Sc. II

Subject- Immunology

Paper- BT-117

August, 2023 1 st Week 1, 2, 3 Aug	Introduction and overview of Immunology, concept of Immunity
6 Aug, 2023	Sunday
2 nd Week 7, 8, 9, 10 Aug	Cells of the Immune system. Innate and cellular immunity
13 Aug, 2023	Sunday
3 rd Week 14, 16, 17 Aug	Physical and chemical barriers, cellular defenses, inflammation
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4 th Week 21, 22, 23, 24 Aug	Receptors involved in innate immune system, cells and organs involved in adaptive immune response
27 Aug, 2023	Sunday
5 th Week 28, 29, 31 Aug	Fate of antigen after penetration, interrelationship between innate and acquired immunity, Requirements of Immunogenicity
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- M.Sc. II

Subject- Immunology

Paper- BT-117

September, 2023	
3 Sept, 2023	Sunday
2nd Week 4, 6 Sept	Primary and secondary responses. Major classes of antigens. Basic structure of antibodies
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmashtami Sunday
3rd Week 11, 12, 13, 14 Sept	Antibody classes and biological activity, Antigenic determinants on Immunoglobulins Immunoglobulin super family.
17 Sept, 2023	Sunday
4th Week 18, 19, 20, 21 Sept	Organization and expression of immunoglobulin genes. Antigen-antibody interactions: immunoprecipitation, agglutination
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheedee Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5th Week 26, 27, 28 Sept	ELISA, Immunofluorescence, Flow cytometry

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- M.Sc. II

Subject- Immunology

Paper- BT-117

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 3, 4, 5 Oct	Hybridoma Technology: commercial production of antibodies using monoclonal antibodies Vaccines: live attenuated, killed, subunit, conjugate and DNA vaccines.
8 Oct, 2023	Sunday
2nd Week 9, 10, 11, 12 Oct	Production of recombinant antibodies and edible vaccines, Development of diagnostics and immunoprophylactics using biotech and nanotech tools
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 16, 17, 18, 19 Oct	Biology of B lymphocytes: introduction, ontogeny, B cell membrane proteins.
22 Oct, 2023	Sunday
4th Week 23, 25, 26 Oct	Signal transduction molecules associated with membrane immunoglobulins. Biology of T cells: Antigen-specific T cell receptors
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5th Week 30, 31 Oct	T-Cell differentiation, thymic selection

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Preeti Sharma

Class- M.Sc. II

Subject- Immunology

Paper- BT-117

November, 2023 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
1st Week 2 Nov, 2023	Role of major histo-compatibility complex in immune system
2nd Week 6, 7, 8, 9 Nov	Activation and function of T and B cells. Cytokines, Complement system
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 17 Nov – 18 Nov	Sessional Examination Revision
19 Nov, 2023	Sunday
4th Week 20 Nov - 24 Nov	Sessional Examination Revision
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- B.Sc. III

Subject- Plant Biotechnology

Paper- XII

August, 2023 1 st Week 3 Aug, 4 Aug	Plant Tissue Culture: Introduction/Concept, History, Scope and Applications along with major achievements. Plant Tissue Culture Laboratory: Layout and organization, different work areas, infrastructure/equipments and instruments and other requirements.
6 Aug, 2023	Sunday
2 nd Week 10 Aug, 11 Aug	Aseptic Techniques: General sanitation/cleanliness of PTC laboratory and precautions regarding maintenance of aseptic conditions, Washing, drying and sterilization of glassware, sterilization of media, surface sterilization, aseptic work station.
13 Aug, 2023	Sunday
3 rd Week 17 Aug, 18 Aug	Culture Media: Nutritional requirements for plant tissue culture, role of different media components, plant growth regulators, different culture media viz. MS, B5 Nitsch and White's medium, Preparation of culture media.
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4 th Week 24 Aug, 25 Aug	Micropropagation/clonal propagation of elite species (different routes of multiplication-axillary bud proliferation, somatic embryogenesis, organogenesis), Synthetic seeds
27 Aug, 2023	Sunday
5 th Week 31Aug	Explants, their cellular characteristics, dedifferentiation and redifferentiation, cellular totipotency, organogenesis and somatic embryogenesis.
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- B.Sc. III

Subject- Plant Biotechnology

Paper- XII

September, 2023 1 st Week 1 Sept	Callus and suspension culture techniques: Introduction, principle, methodology, applications and limitations. Somaclonal variation.
3 Sept, 2023	Sunday
2 nd Week 7 Sept, 8 Sept	Organ culture: Anther & Pollen culture, ovary, ovule, embryo and endosperm culture – concept, technique, applications and limitations. Embryo rescue.
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmahstami Sunday
3 rd Week 14 Sept, 15 Sept	Protoplast culture: Protoplast isolation, viability test, protoplast culture. Somatic hybridization – protoplast fusion techniques (chemical and electro-fusion)
17 Sept, 2023	Sunday
4 th Week 21 Sept, 22 Sept	selection of hybrids, production of symmetric and asymmetric hybrids and cybrids. Practical applications of somatic hybridization and cybridization.
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheedi Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5 th Week 28 Sept, 29 Sept	Production of secondary metabolites in vitro: introduction, technique and utilities.

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- B.Sc. III

Subject- Plant Biotechnology

Paper- XII

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 5 Oct, 6 Oct	Biotransformation. Plant germ plasm conservation and cryopreservation.
8 Oct, 2023	Sunday
2nd Week 12 Oct, 13 Oct	Genetic Engineering in plants: Introduction, Plant transformation by Agrobacterium tumefaciens and A. rhizogenes. Ti plasmid. Strategies for gene transfer to plant cells. Binary and cointegrate vectors.
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 19 Oct, 20 Oct	Gene targeting in plants. Use of plant viruses as vectors
22 Oct, 2023	Sunday
4th Week 26 Oct, 27 Oct	Direct DNA transfer/Physical methods of gene transfer in plants - micro projectile bombardment, electroporation, liposome mediated, Calcium phosphate mediated etc.
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
25 Oct – 4 Nov, 2023	Sessional Exams

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- B.Sc. III

Subject- Plant Biotechnology

Paper- XII

November, 2023 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
1st Week 2 Nov, 3 Nov	Transgenic Plants: Introduction and applications; Developing insect resistance, bacterial and fungal disease resistance
2nd Week 9 Nov	Transgenic Plants: virus resistance and abiotic stress tolerance in plants.
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 17 Nov	Improving food quality – nutritional enhancement of plants (carbohydrates, seed storage proteins and vitamins)
19 Nov, 2023	Sunday
4th Week 23 Nov, 24 Nov	Plants as Bioreactors: antibodies, polymers, industrial enzymes. Edible vaccines.
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- M.Sc. I

Subject- Biomolecules

Paper- BT-101

August, 2023 1 st Week	Admission Process
6 Aug, 2023	Sunday
2 nd Week	Admission Process
13 Aug, 2023	Sunday
3 rd Week 16 Aug & 17 Aug	Structure and properties of purines and pyrimidine bases; Nucleosides and Nucleotides
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4 th Week 21, 23*2, 24 Aug	Biologically important nucleotides; Biological functions of nucleotides Nucleic acids as the genetic material – experimental evidences; Chargaff's rules; The covalent backbone of nucleic acids; Double helical model of DNA structure
27 Aug, 2023	Sunday
5 th Week 28, 30*2, 31Aug	Structural polymorphism of DNA (A,B and Z-DNA) and RNA ; Denaturation & annealing of DNA; Chemical synthesis of oligonucleotides.
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- M.Sc. I

Subject- Biomolecules

Paper- BT-101

September, 2023 1 st Week 1 Sept - 2 Sept	
3 Sept, 2023	Sunday
2 nd Week 4, 6*2 Sept	Water: Structure, hydrogen bonding, as a biological solvent, ionization and fitness of the aqueous environment for living organisms; pH; Buffers Henderson-Hasselbalch equation; Physiological buffers.
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmastami Sunday
3 rd Week 11, 13 & 14 Sept	Carbohydrates: Structure, occurrence and biological importance of important monosaccharides, oligosaccharides and polysaccharides Ring structures and anomeric forms;
17 Sept, 2023	Sunday
4 th Week 18, 20 & 21 Sept	Mutarotation; sugar derivatives; reactions of monosaccharides Glycosaminoglycans; Heteropolysaccharides of bacterial and algal cell walls; Proteoglycans; Glycoproteins; Lectins.
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheed Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5 th Week 27 & 28 Sept	Amino acids and Proteins : Common structural features, classification by R group, Zwitter ion structures, acid-base properties and titration curves of amino acids; Essential amino acids;

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- M.Sc. I

Subject- Biomolecules

Paper- BT-101

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1 st Week 4 Oct & 5 Oct	Separation of amino acids; Peptides including biologically active peptides; Classification and different structural levels (Primary, secondary, tertiary & quaternary) of proteins; Ramachandran plot;
8 Oct, 2023	Sunday
2 nd Week 9 Oct, 11 Oct & 12 Oct	Determination of amino acid composition of proteins; Characteristic amino acid composition of proteins
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3 rd Week 16, 18, 19 Oct	Determination of amino acid sequences of proteins. Chemical synthesis of polypeptides
22 Oct, 2023	Sunday
4 th Week 23, 25, 26 Oct	Effect of amino acid sequence on the function of a protein and stability of α -helix; Protein folding and role of chaperons in protein folding
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5 th Week 30 Oct	Classification, structures, nomenclature and properties of fatty acids; Essential fatty acids; Acylglycerols Characterization of fats- Saponification value, iodine number, rancidity, acid value, Reichert-Meissel number

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- M.Sc. I

Subject- Biomolecules

Paper- BT-101

November, 2023 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
1st Week 2 Nov, 2023	Structures and properties of different types of phospholipids and sphingolipids (sphingomyelins, cerebrosides & gangliosides)
2nd Week 6, 8 & 9 Nov	Structure and functions of prostaglandins, Prostacyclins, Thromboxanes, and Leukotrienes; Terpenes of biological significance; Sterols and bile acids.
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 17 Nov - 18 Nov	Doubts clearance Sessional Exams
19 Nov, 2023	Sunday
4th Week 20 Nov - 24 Nov	Doubts clearance Sessional Exams
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- M.Sc. II

Subject- Plant Biotechnology

Paper- BT-115

August, 2023 1 st Week 1, 3, 4, 5 Aug	Organization of plant genome – Nuclear genome, Chloroplast genome and mitochondrial genome. Transposon and T – DNA tagging.
6 Aug, 2023	Sunday
2 nd Week 8, 10, 11, 12 Aug	Chloroplast transformation – vector designing, method and advantages; Agrobacterium mediated transformation – Ti and Ri plasmids, role of virulence genes, mechanism of T-DNA transfer
13 Aug, 2023	Sunday
3 rd Week 15, 17, 18, 19 Aug	Vectors based on Ti and Ri plasmids – cointegrate and binary vectors, technique and factors affecting Agrobacterium mediated transformation of plants.
15 Aug, 2023 17, 18 Aug	Independence Day Direct gene transfer – particle bombardment
20 Aug, 2023	Sunday
4 th Week 22, 24, 25, 26 Aug	Direct gene transfer – PEG-mediated, electroporation, microinjection and alternative methods.
27 Aug, 2023	Sunday
5 th Week 29 Aug, 31Aug	Molecular characterization of transformants. Methods for multiple gene transfer in plants.
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- M.Sc. II

Subject- Plant Biotechnology

Paper- BT-115

September, 2023 1 st Week 1 Sept - 2 Sept	Screenable and selectable markers, Marker free methodologies, Gene silencing in transgenic plants.
3 Sept, 2023	Sunday
2 nd Week 8, 9 Sept	Viral resistance; Fungal resistance;
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmashtami Sunday
3 rd Week 12, 14, 15, 16 Sept	Insect resistance; Herbicide resistance Various abiotic stresses (like drought, salinity, temperature and flooding)
17 Sept, 2023	Sunday
4 th Week 19, 21, 22 Sept	Production of medically related proteins in plants, nutritional enhancement of plants (carbohydrates)
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheedi Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5 th Week 26, 28, 29, 30 Sept	Molecular farming/pharming: Nutritional enhancement of plants (seed storage proteins, vitamins)

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- M.Sc. II

Subject- Plant Biotechnology

Paper- BT-115

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1 st Week 3, 5, 6, 7 Oct	Manipulation of flower colors and other value addition compounds (like industrial enzymes)
8 Oct, 2023	Sunday
2 nd Week 10, 12, 13, 14 Oct	Production of useful secondary metabolites through plant cell cultures Strategies used for high yield of product – development and selection of high yielding cell line cultures,
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3 rd Week 17, 19, 20, 21 Oct	Optimization of factors affecting yield of plant cells (physical culture conditions, media and other biochemicals)
22 Oct, 2023	Sunday
4 th Week 26, 27 Oct	Bioreactors and immobilized plant cell culture, biotransformation, permeabilization of cells and removal of secreted products
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5 th Week 31 Oct	Intellectual property rights (IPR); Patents, trade secrets, copyright, trademarks;

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Dr. Twinkle Sugla

Class- M.Sc. II

Subject- Plant Biotechnology

Paper- BT-115

November, 2023 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
1st Week 2, 3, 4 Nov, 2023	Plant genetic resources; GATT & TRIPPS; Patenting of biological material; Patenting of transgenic organisms and genes;
2nd Week 7, 9 Nov	Plant breeders rights (PBRs) and farmers rights; Concerns about GM crops – environmental, biosafety and ethics.
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 17 Nov - 18 Nov	Doubts clearance Sessional Exams
19 Nov, 2023	Sunday
4th Week 20 Nov - 24 Nov	Doubts clearance Sessional Exams
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Sonika
Class- B.Sc. I
Subject- Introduction of Biotechnology
Paper- B23-BTY-101

August, 2023 1 st Week 2,3 Aug	Introduction to biotechnology – an interdisciplinary pursuit; Main areas of application of biotechnology; Biotechnology research in India
6 Aug, 2023	Sunday
2 nd Week 7,8 ,9 Aug	biotechnology in context of developing world; Public perception of biotechnological products;
13 Aug, 2023	Sunday
3 rd Week 14,16 Aug	Brief account of safety guidelines, risk assessment and ethics in biotechnology
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4 th Week 21, 22, 23 Aug	Very brief account of intellectual property rights; Substrates (raw materials
27 Aug, 2023	Sunday
5 th Week 28, 29Aug	the future of biotechnology. In brief scope and techniques of preservation. Introduction of fermentation technology.
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- B.sc I

Subject- Introduction of Biotechnology

Paper- B23-BTY-101

3 Sept, 2023	Sunday
2nd Week 4, 5, 6 Sept	organ culture and tissue engineering etc
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmastami Sunday
3rd Week 11, 12, 13 Sept	Introduction of plant tissue culture (in brief history, culture media, explants, totipotency)
17 Sept, 2023	Sunday
4th Week 18,19, 20 Sept	dedifferentiation and types of cell & tissue culture etc.
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheedi Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5th Week 25, 26, 27 Sept	Scope and applications of animal biotechnology and plant biotechnology

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Sonika
Class- B.Sc. I
Subject- Introduction of Biotechnology
Paper- 23-BTY-101

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 3,4 Oct	Brief account of immunotechnology: immune system (immune cells, types of immunity and general structure of immunoglobulins),
8 Oct, 2023	Sunday
2nd Week 9,10,11 Oct	hybridoma technology and monoclonal antibodies. <i>In vitro</i> fertilization and embryo transfer technology in brief.
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 16,17,18 Oct	Genetics and Biotechnology: Introduction of genetic engineering
22 Oct, 2023	Sunday
4th Week 23 Oct	gene and genomes, proteins and proteome, history of genetic manipulations
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5th Week 30, 31 Oct	DNA fingerprinting and forensic analysis. Industrial genetics, Potential laboratory biohazards of genetic engineering. Introduction to molecular markers and genetic mapping;
25 Oct – 4 Nov, 2023	Sessional Exams

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- B.Sc. I

Subject- Introduction of Biotechnology

Paper- B23-BTY-101

November, 2023 1st Week 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
2nd Week 6,7, 8 Nov	Introduction of enzyme technology: nature of enzymes, application of enzymes and immobilized enzymes
10 Nov - 16 Nov, 2023	Diwali Break
19 Nov, 2023	Sunday
4th Week 20, 21, 22 Nov	microbial insecticides, biofertilizers, microbes in oil recovery and bioleaching. Application of biotechnology in medicine (pharmaceutical industry, vaccines, antibiotics etc.), food industry, biofuels and chemical industry Environmental Biotechnology: An overview, scope and market of biological control of environment. Brief account on bioremediation and waste treatment biotechnology
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- B.sc III

Subject- Animal Biotechnology

Paper- XI

August, 2023 1st Week 2, 5, Aug	Animal Cell & Tissue Culture: Introduction, Principles & practice. History and Development of animal cell culture. Scope and Applications.
6 Aug, 2023	Sunday
2nd Week 9 ,12 Aug	Culture Media: Media components, Serum containing and serum free media. Natural media- Plasma clot, biological fluids, tissue extracts
13 Aug, 2023	Sunday
3rd Week 16-19 Aug	Growth factors required for proliferation of animal cells. Chemically defined media, balanced salt solutions
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4th Week 23, 26 Aug	Physical requirements for growing animal cells in culture. Washing, drying, sterilization practices, various instruments and their uses in animal cell culture practices.
27 Aug, 2023	Sunday
5th Week 28 Aug	Primary Cell Culture techniques: Initiation of cell culture-substrates (glass, plastic, metals) their preparation and sterilization. Isolation of tissue explants
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- B.sc III

Subject- Animal Biotechnology

Paper- XI

September, 2023 1 st Week 2 Sept	disaggregation- enzyme disaggregation and mechanical disaggregation of the tissue. development of primary culture and cell lines
3 Sept, 2023	Sunday
2 nd Week 9 Sept	Subculture. Contamination, Suspension culture, Growth curve of animal cells in culture.
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmashtami Sunday
3 rd Week 13,16 Sept	Secondary cell culture – transformed cell and continuous cell lines. Finite and infinite cell lines. Cell lines: Insect and animal cells. Commonly used cell lines
17 Sept, 2023	Sunday
4 th Week 20, 23 Sept	organization and characteristics. Cell repositories and their function. Karyotyping, biochemical and genetic characterization of cell lines.
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheedi Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5 th Week 27, 30 Sept	Organ Culture: technique, advantages, applications and limitations. Artificial skin

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- B.Sc. III

Subject- Animal Biotechnology

Paper- XI

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 1 Oct	Transfection of animal cells: transfection methods. Methods for cell fusion, Selectable markers, HAT selection and Antibiotic resistance
8 Oct, 2023	Sunday
2nd Week 11,14 Oct	Cloning and expression of foreign genes in animal cells, Gene Therapy: introduction, types of gene therapy, vectors in gene therapy, major achievements, problems and prospects
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 18, 21 Oct	Expression vectors. Over production and preparation of the final product i.e. expressed proteins.
22 Oct, 2023	Sunday
4th Week 25, 27 Oct	Production of vaccines in animal cells , Therapeutic products through genetic engineering – blood proteins, insulin, growth hormone etc.
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5th Week 31 Oct	Hybridoma Technology: Production of monoclonal antibodies and their applications.
25 Oct – 4 Nov, 2023	Sessional Exams

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class-B.Sc. III

Subject- Animal Biotechnology

Paper- XI

November, 2023 1st Week 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
2nd Week 8, Nov	Embryo transfer technology- technique, its applications
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 18 Nov	Artificial insemination. Animal clones. Transgenic Animals: transgenic sheep, cow, pig, goat etc.
19 Nov, 2023	Sunday
4th Week 22, Nov	Production of transgenic mice, ES cells can be used for gene targeting in mice, applications of gene targeting
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Sonika

Class- M.Sc. I

Subject- Molecular Cell Biology

Paper- BT-103

August, 2023 1 st Week	Admission Process
6 Aug, 2023 2 nd Week	Sunday Admission Process
13 Aug, 2023 3 rd Week 16, 17, Aug 2023	Sunday GPCR Cell surface receptors
15 Aug, 2023 20 Aug	Independence Day Sunday
4 th Week 22,23,24 Aug	Overview of cells and cell research: Origin and evolution of cells, Cells as experimental models, tools of cell biology Nucleus: Nuclear envelope and traffic between the nucleus and cytoplasm, internal organization of the nucleus, nucleolus, nucleus during mitosis
27 Aug, 2023 5 th Week 29,31Aug	Sunday DNA Replication: DNA polymerases, replication fork, fidelity of replication, origins and initiation of replication, replication at the ends of chromosomes Fundamentals of Molecular Biology: Heredity, Genes, and DNA, Expression of Genetic Information, Recombinant DNA, Detection of Nucleic Acids and Proteins, Gene Function in Eukaryotes
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- M.Sc. I

Subject- Molecular cell biology

Paper- BT-103

3 Sept, 2023	Sunday
2nd Week 5,6,7 Sept	RNA polymerases and transcription factors, RNA processing and turnover RNA Synthesis and Processing: Prokaryotic transcription, Eukaryotic transcription: Protein Sorting and Transport: Endoplasmic reticulum, Golgi apparatus, and Lysosomes, mechanism of vesicular transport
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmashtami Sunday
3rd Week 12,13,14 Sept	Protein folding and processing
17 Sept, 2023	Sunday
4th Week 19, 20,21 Sept	regulation of protein function, protein degradation
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheedi Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5th Week 26, 27, 28 Sept	Translation of mRNA

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- M.Sc. I

Subject-Molecular Cell Biology

Paper- BT-103

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 3, 4, 5 Oct	Cell death and cell renewal: programmed cell death, stem cells and maintenance of .
8 Oct, 2023	Sunday
2nd Week 10,11,12 Oct	Adult tissues. Embryonic stem cells and therapeutic cloning
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 17, 18, 19 Oct	Signaling in development and differentiation and topic revision
22 Oct, 2023	Sunday
4th Week 25, 26 Oct	Cytoskeleton, signaling in development and differentiation
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5th Week 31 Oct	Pathways of intracellular signal transduction
25 Oct – 4 Nov, 25,26, Oct. 1, 2 Nov	Nucleus: Nuclear envelope and traffic between the nucleus and cytoplasm, internal organization of the nucleus, nucleolus, nucleus during mitosis

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- M.Sc. I

Subject- Molecular cell biology

Paper- BT-103

November, 2023 1st Week 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
2nd Week 7,8, 9 Nov	Signaling molecules and their receptors, functions of cell surface receptor
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 14,15,16 Nov	Cancer: Development and causes of cancer, tumor viruses, oncogenes, tumour, Suppressor genes, application of molecular biology to cancer prevention and treatment
19 Nov, 2023	Sunday
4th Week 17 to 24 Nov	SESSIONALS
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Sonika

Class- M.sc II

Subject- Microbial Biotechnology

Paper- BT-116

August, 2023 1 st Week 2,4,5 Aug	Microbial Biotechnology: Scopes application and challenges.
6 Aug, 2023 2 nd Week 7,9,11, 12 Aug	Sunday Isolation, preservation and improvement of industrially important microorganisms
13 Aug, 2023 3 rd Week 14,16,18,19 Aug	Sunday Kinetics of microbial growth and product formation. Fermentation system
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4 th Week 21,23,25,26 Aug	batch and continuous system, fed batch system
27 Aug, 2023	Sunday
5 th Week 28 Aug	Multistage system. Solid state fermentation. Overproduction of primary and secondary metabolites
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- M.sc II

Subject- Microbial biotechnology

Paper- BT-116

September, 2023 1st Week 1, 2 Sept	Fermentation raw materials: Media for industrial fermentations
3 Sept, 2023	Sunday
2nd Week 4,6,8,9Sept	Criteria used in media formulation. Fermenter/bioreactor design and operation
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmastami Sunday
3rd Week 11,13,15,16 Sept	Types of fermentor, stirred tank reactor, bubble column reactor, airlift reactor, packed bed reactor, fluidized bed reactor and trickle bed reactor
17 Sept, 2023	Sunday
4th Week 18,20,22 Sept	Agitation and aeration in a reactor, mass transfer. Foam formation and control.
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheed Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5th Week 27,29,30 Sept	Industrial production of alcohol (ethanol, wine and beer)

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- M.sc II

Subject- Microbial biotechnology

Paper- BT-116

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 4,6,7 Oct	improvement by genetic engineering. Microbial production of acids (citric, acetic acid)
8 Oct, 2023	Sunday
2nd Week 9,11,13,14 Oct	(glycerol acetone and butanol) Fermentation
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 16,18,20,21 Oct	aminoacids (lysine and glutamic acid).
22 Oct, 2023	Sunday
4th Week 23,25,27 Oct	Production of antibiotics ; Penicillin and cephalosporin Microbial inoculants: Biomass production: single cell protein (SCP) production; microbial inoculants; Microbial transformation of steroids and sterols
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5th Week 30 Oct	Microbial polysaccharides: fermentative production of xanthan gums,.
25 Oct – 4 Nov, 2023 25,27,28 oct.1,3,4 Nov	Food starter cultures; baker's yeast, starter cultures for the dairy industry, meat starter cultures

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023

(August - December)

Name of the Teacher – Ms. Sonika

Class- M.Sc. II

Subject- Micobial biotechnology

Paper- BT-116

November, 2023 1st Week 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
2nd Week 6,8 Nov	Bacterial bioplastics, genetic engineering of microorganisms for the production of poly-3 hydroxyalkanoates
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 17 to 24 Nov	SESSIONALS
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Manpreet Kaur

Class- B. Sc. 2nd Year 3rd Sem

Subject- Molecular Biology

Paper- VII

August, 2023 1 st Week 2 Aug	Molecular Biology: Introduction to molecular aspects of life. DNA as the genetic material – experiments proving DNA and RNA as genetic material
6 Aug, 2023	Sunday
2 nd Week 7 Aug, 9 Aug	Nucleic acids: Structure, function and properties of DNA and RNA. Watson and Crick model of DNA. DNA forms (A, B and Z), their characteristic. Different types of RNA, their structure and function.
13 Aug, 2023	Sunday
3 rd Week 14 Aug, 16 Aug	Organization of Genomes – bacterial, viral, human, organelles. Eukaryotic genomes: Chromosomal organization and structure. Insertion elements and transposons; TEST-1
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4 th Week 21 Aug, 23 Aug	Euchromatin, heterochromatin, centromere, telomere. Chromatin structure (nucleosome), histone and non-histone proteins.
27 Aug, 2023	Sunday
5 th Week 28 Aug	IS elements, transposable elements of Maize and P elements of Drosophila. Extra chromosomal DNA in prokaryotes – plasmids. DNA Replication: Central dogma of molecular biology
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

**Lesson Plan for the Odd Semester, 2023
(August - December)**

Name of the Teacher – Ms. Manpreet Kaur

Class- B.Sc. 2nd Year 3rd Sem

Subject- Molecular Biology

Paper- VII

3 Sept, 2023	Sunday
2nd Week 4 Sept, 6 Sept	Semi-conservative mode of DNA replication, experimental proof. Unidirectional and bidirectional mode of DNA replication, theta model and rolling circle model. TEST-2
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmastami Sunday
3rd Week 11 Sept, 13 Sept	DNA replication in prokaryotes and eukaryotes, different stages, proteins and enzymes involved
17 Sept, 2023	Sunday
4th Week 18 Sept, 20 Sept	DNA damage and repair: causes of DNA damage, mutations. Repair mechanisms- photo reactivation, excision repair, mismatch repair, SOS repair.
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheed Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5th Week 27 Sept	Genetic Code: concept, elucidation or cracking of genetic code, features of genetic code, Wobble hypothesis.

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Manpreet Kaur

Class- B.Sc. 2nd Year 3rd Sem

Subject- Molecular Biology

Paper- VII

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 4 Oct	Structure of gene- introns/exons, regulatory sequences, structure of prokaryotic gene. Transcription in prokaryotes and eukaryotes, diff. stages, mechanism, promoters, transcription factors, RNA polymerases.
8 Oct, 2023	Sunday
2nd Week 9 Oct, 11 Oct	Post transcriptional modifications- 5' cap formation, 3'-end processing/polyadenylation and gene splicing and generation of mature mRNA. Inhibitors of transcription.
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 16 Oct, 18 Oct	Translation/Protein synthesis: Mechanism of initiation, elongation and termination of protein synthesis in prokaryotes and eukaryotes.
22 Oct, 2023	Sunday
4th Week 23 Oct, 25 Oct	Inhibitors of translation. Post-translational Modifications. Regulation of Gene Expression in prokaryotes and eukaryotes, induction and repression TEST-3
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5th Week 30 Oct	Positive and negative regulation. Operon model- lac, ara, trp, catabolite repression, transcription attenuation
25 Oct – 4 Nov, 2023	Sessional Exams

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Manpreet Kaur

Class- B.Sc. 2nd Year 3rd Sem

Subject- Molecular Biology

Paper- VII

November, 2023 1st Week 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
2nd Week 6 Nov, 8 Nov	Molecular mechanisms of DNA recombination in eukaryotes – Site Specific and Homologous recombination.
10 Nov - 16 Nov, 2023	Diwali Break
19 Nov, 2023	Sunday
4th Week 20 Nov, 22 Nov	Recombination in prokaryotes – Transformation, transduction and conjugation TEST-4
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Manpreet Kaur and Dr. Preeti Sharma

Class- M.Sc. 1st Year Sem I

Subject- Microbiology

Paper- BT-102

August, 2023 1 st Week 1, 3, 4 Aug	Admission Process
6 Aug, 2023	Sunday
2 nd Week 7, 8, 10, 11 Aug	Admission Process
13 Aug, 2023	Sunday
3 rd Week 17, 18 Aug	Various branches and applications of Microbiology, History and contributions of various scientists to this science with particular reference to the contribution of the following scientists- A.V.Leeuwenhoek, Louis Pasteur, Edward Jenner, Robert Koch, Alexander Fleming and Joseph Lister.
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4 th Week 21, 22, 24, 25 Aug	Nutritional requirements and nutritional categories of microorganisms, Physical factors for growth, Enrichment culture techniques for isolation of microorganisms, pure culture techniques and preservation techniques. Microbial ecology TEST-1
27 Aug, 2023	Sunday
5 th Week 28, 29 Aug	Distinguishing features of bacteria, viruses, fungi, protozoa, algae. Criteria used for characterization including molecular approaches, Biogeochemical cycles
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Manpreet Kaur and Dr. Preeti Sharma

Class- M.Sc. 1st Year Sem I

Subject- Microbiology

Paper- BT-102

September, 2023 1 st Week 1 Sept	Classification, Nomenclature and Identification of microorganisms TEST-2
3 Sept, 2023	Sunday
2 nd Week 4, 8 Sept	Gram (+) and Gram (-) bacteria of medical and industrial importance (Pseudomonas, Azotobacter, Rhizobium, Agrobacterium).
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmashtami Sunday
3 rd Week 11, 12, 14, 15 Sept	Morphology and arrangement of bacterial cells, Bacterial- flagella, Fimbriae, capsule, spores and cysts, cell walls of Gram +ve and Gram – ve bacteria , Characteristics of Mycobacterium and Mycoplasmas; Physical environment: Microenvironment & Niche Microorganisms and ecosystems. TEST-3
17 Sept, 2023	Sunday
4 th Week 18, 19, 21, 22 Sept	Photosynthetic prokaryotes (purple bacteria, green bacteria, cyanobacteria) and actinomycetes; Soil microbiology: Types & functions of microorganisms in soil. TEST-4 and TEST-5
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheed Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5 th Week 26, 28, 29 Sept	Brief account of different types of viruses with special reference to lambda phage, herpes, adenoviruses and retroviruses, Microorganism associations with vascular plants (Mycorrhizae)

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Manpreet Kaur and Dr. Preeti Sharma

Class- M.Sc. 1st Year Sem I

Subject- Microbiology

Paper- BT-102

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 3, 5, 6 Oct	Viriods and prions; fungi and algae of industrial importance. Microorganism associations with vascular plants (rhizobia) TEST-6
8 Oct, 2023	Sunday
2nd Week 9, 10, 12, 13 Oct	Sterilization methods- dry heat, moist heat, radiations, filtration, gaseous sterilization, Validation of sterilization processes; Factors affecting antimicrobial action. Microorganism growth in Foods
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 16, 17, 19, 20 Oct	Mode of action of antimicrobial agents, Antibiotics and their mode of action, Microbiological assay of antibiotics (ampicillin, streptomycin, tetracycline etc.), Food spoilage & control
22 Oct, 2023	Sunday
4th Week 23, 26, 27 Oct	Disinfectants; Types of toxins and their mode of action TEST-7
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5th Week 30, 31 Oct	Study of growth curve, measurement of growth TEST- 8

KVA DAV College for Women, Karnal

**Lesson Plan for the Odd Semester, 2023
(August - December)**

Name of the Teacher – Ms. Manpreet Kaur and Dr. Preeti Sharma

Class- M.Sc. 1st Year Sem I

Subject- Microbiology

Paper- BT-102

November, 2023 1st Week 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
2, 3 Nov	Taxonomy and nomenclature based upon Bergey's manual;
2nd Week 6, 7, 9 Nov	REVISIONS
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 17 Nov - 18 Nov	Sessional Exams
19 Nov, 2023	Sunday
4th Week 20 Nov - 24 Nov	Sessional Exams
5th Week 25 Nov, 2023 Onwards	University Examination

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Manpreet Kaur

Class- M.Sc. 2ND Year, Sem III

Subject- Molecular Genetics

Paper- BT-114

August, 2023 1 st Week 2 Aug - 3 Aug	Eukaryotic Genome Structure and Organization Packaging of DNA into chromosomes, Special features of metaphase chromosomes, Chromosome banding, Genome size and complexity,
6 Aug, 2023	Sunday
2 nd Week 7 Aug - 10 Aug	Gene organization, Multigene families, Pseudo genes, Repetitive DNA, Chromatin domains, Chromatin modifications TEST-1
13 Aug, 2023	Sunday
3 rd Week 14, 16, 17 Aug	The Mutability of DNA An overview of mutation and polymorphism, VNTR polymorphism, Hot spots, DNA damage- spontaneous, Induced (Alkylation, oxidation, radiation),
15 Aug, 2023 20 Aug, 2023	Independence Day Sunday
4 th Week 21 Aug - 24 Aug	Signature Tagged Mutagenesis (STM), Gene trap vector, Gene conversion. Transcription Regulation in Prokaryotes Positive and negative control of transcription, Repression and activation, TEST-2
27 Aug, 2023	Sunday
5 th Week 28, 29, 31 Aug	Organization and regulation of Lac, Trp and Ara operon in <i>E. coli</i> . Organization of genome in lambda phage, Regulation of lytic cascade, Antitermination, Repressor proteins,
30 Aug, 2023	Raksha Bandhan

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Manpreet Kaur

Class- M.Sc. 2nd Year, Sem III

Subject- Molecular Genetics

Paper- BT-114

September, 2023 1 st Week 1 Sept - 2 Sept	NO CLASS ACCORDING TO TIME TABLE
3 Sept, 2023	Sunday
2 nd Week 4, 6 Sept	Establishment of lysogeny, Balance between lysogeny and lytic cycle. Transcription Regulation in Eukaryotes Eukaryotic activators, DNA binding domains, Transcriptional repressors
5 Sept, 2023 7 Sept, 2023 10 Sept, 2023	Talent Show Janmashtami Sunday
3 rd Week 11 Sept-14 Sept	Signal transduction and control of transcriptional regulators, Gene silencing, Epigenetic gene regulation TEST-3
17 Sept, 2023	Sunday
4 th Week 18 Sept - 21 Sept	Site-Specific Recombination and Transposition Concept, Recombinases and their function, cre-lox recombination, Biological role of site specific recombination, Classes of transposable elements-DNA transposons
23 Sept, 2023 24 Sept, 2023 25 Sept, 2023	Shaheedi Divas/Haryana War Heroes' Martyrdom Day Sunday Annual Prize Distribution Function
5 th Week 26 Sept - 28 Sept	Virus like transposons, Non-viral retro transposons, Mechanism of DNA and RNA mediated transposition

KVA DAV College for Women, Karnal

Lesson Plan for the Odd Semester, 2023 (August - December)

Name of the Teacher – Ms. Manpreet Kaur

Class- M.Sc. 2ND Year, Sem III

Subject- Molecular Genetics

Paper- BT-114

October, 2023 1 Oct, 2023 2 Oct, 2023	Sunday Mahatama Gandhi Jayanti
1st Week 3 Oct – 5 Oct	Genome Mapping Shot gun approach, Clone contig approach, DNA markers for genetic mapping, RFLP, SSP, SNPs
8 Oct, 2023	Sunday
2nd Week 9 Oct - 12 Oct	Physical mapping-Restriction mapping, Florescent <i>in situ</i> hybridization (FISH), Sequence tagged sites (STS) mapping
15 Oct, 2023	Maharaja Agrasen Jayanti, Sunday
3rd Week 16 Oct - 19 Oct	Regulatory RNAs Riboswitches, Interfering RNA (RNAi) and gene expression, Short interfering RNA (si RNA) and its fuctions, Micro RNA and its fuctions, Antisense RNA and gene expression
22 Oct, 2023	Sunday
4th Week 23, 25, 26 Oct	Transcriptome Analysis Transcriptome, Rapid Amplification of cDNA ends (RACE), SAGE, DNA microarrays TEST-4
24 Oct, 2023 28 Oct, 2023 29 Oct, 2023	Dussehra Maharishi Valmiki Jayanti Sunday
5th Week 30 Oct – 31 Oct	Genotoxicity/ mutagenicity test systems (Ames test, Sister chromatid exchanges, Micronucleus, Comet assay),

KVA DAV College for Women, Karnal

**Lesson Plan for the Odd Semester, 2023
(August - December)**

Name of the Teacher – Ms. Manpreet Kaur

Class- M.Sc. 2ND Year, Sem III

Subject- Molecular Genetics

Paper- BT-114

November, 2023 1st Week 1 Nov, 2023 5 Nov, 2023	Haryana Day Sunday
2 Nov, 2023	Comparative Genomics Concept, Comparative genomics of eukaryotes and its role in evolution
2nd Week 6 Nov – 9 Nov	Genome Sequencing High throughput sequencing, Clone by clone approach, whole genome shot gun Sequencing TEST-5
10 Nov - 16 Nov, 2023	Diwali Break
3rd Week 17 Nov - 18 Nov	Sessional Exams
19 Nov, 2023	Sunday
4th Week 20 Nov - 24 Nov	Sessional Exams
5th Week 25 Nov, 2023 Onwards	University Examination