

## I – Academic Planner

### A. Teaching Plan (Year : 2017-2018 , Semester: Odd ( III, V))

**Teacher's Name: Dr. Ram Babu    Department: Botany**

S · N o ·	UPC	Paper Name	Core/AE CC/GE/S EC	Topic/Unit	Start Date	End Date
<b>1</b>	321675 02	Biostatistics (THEORY)	DSE	Unit 1: Biostatistics - definition - statistical methods - basic principles. Variables - measurements, functions, limitations and uses of statistics. Unit 2: Collection of data primary and secondary - types and methods of data collection procedures - merits and demerits. Classification - tabulation and presentation of data - sampling methods. Unit 3: Measures of central tendency - mean, median, mode, geometric mean - merits & demerits.	20 July 2017	16 December 2017
<b>2</b>	321675 02	Biostatistics (PRACTICAL)	DSE	1) Calculation of mean, standard deviation and standard error 2) Calculation of correlation coefficient values and finding out the probability 3) Calculation of 'F' value and finding out the probability value for the F value	20 July 2017	16 December 2017
<b>3</b>	321613 03	Genetics (PRACTICAL)	Core	Unit 7. Study of aneuploidy: Down's, Klinefelter's and Turner's syndromes. Unit 8. Photographs/Permanent Slides showing Translocation Ring, Laggards and Inversion Bridge. Unit 9. Study of human genetic traits: Sickle cell anemia, Xeroderma Pigmentosum, Albinism, red-green Colour blindness, Widow's peak, Rolling	20 July 2017	16 December 2017

				of tongue, Hitchhiker's thumb and Attached ear lobe.		
4	32167501	Analytical Techniques in Plant Sciences (THEORY)	DSE	<p>Unit 4: Spectrophotometry Principle and its application in biological research.</p> <p>Unit 5: Chromatography Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography.</p> <p>Unit 6: Characterization of proteins and nucleic acids Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE</p> <p>Unit 7: Biostatistics Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical; Measures of central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variation, standard deviation; Chi-square test for goodness of fit.</p>	20 July 2017	16 December 2017
5	32167501	Analytical Techniques in Plant Sciences (PRACTICAL)	DSE	<ol style="list-style-type: none"> <li>1. Study of Blotting techniques: Southern, Northern and Western, DNA fingerprinting, DNA sequencing, PCR through photographs.</li> <li>2. Demonstration of ELISA.</li> <li>3. To separate nitrogenous bases by paper chromatography.</li> <li>4. To separate sugars by thin layer chromatography.</li> <li>5. Isolation of chloroplasts by differential centrifugation.</li> <li>6. To separate chloroplast pigments by column chromatography.</li> <li>7. To estimate protein concentration through Lowry's methods.</li> </ol>	20 July 2017	16 December 2017

				8. To separate proteins using PAGE. 9. To separation DNA (marker) using AGE. 10. Study of different microscopic techniques using photographs/micrographs (freeze fracture, freeze etching, negative staining, positive staining, fluorescence and FISH). 11. Preparation of permanent slides (double staining).		
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**A. Teaching Plan (Year : 2017-2018, Semester: Even ( IV, VI))**

**Teacher's Name: Dr. Ram Babu Department: Botany**

<b>S. No.</b>	<b>UPC</b>	<b>Paper Name</b>	<b>Core/AE CC/GE/SEC</b>	<b>Topic/Unit</b>	<b>Start Date</b>	<b>End Date</b>
<b>1</b>	32167 608	Bioinformatics (THEORY)	DSE	Unit 1. Introduction to Bioinformatics Introduction, Branches of Bioinformatics, Aim, Scope and Research areas of Bioinformatics. Unit 2. Databases in Bioinformatics Introduction, Biological Databases, Classification format of Biological Databases, Biological Database Retrieval System. Unit 3. Biological Sequence Databases National Center for Biotechnology Information (NCBI): Tools and Databases of NCBI, Database Retrieval Tool, Sequence Submission to NCBI, Basic local alignment search tool (BLAST), Nucleotide Database, Protein Database, Gene Expression Database. EMBL Nucleotide Sequence Database (EMBL-Bank): Introduction, Sequence Retrieval, Sequence Submission to EMBL, Sequence analysis tools.	1 January 2018	19 May 2018

1	32167 608	Bioinformatics (THEORY)	DSE	1. Nucleic acid and protein databases. 2. Sequence retrieval from databases. 3. Sequence alignment.	1 January 2018	19 May 2018
2	32161 602	Plant Biotechnology (THEORY)	Core	Unit 2: Recombinant DNA technology Restriction Endonucleases (History, Types I-IV, biological role and application); Restriction Mapping (Linear and Circular); Cloning Vectors: Prokaryotic (pUC 18 and pUC19, pBR322, Ti plasmid, BAC); Lambda phage, M13 phagemid, Cosmid, Shuttle vector; Eukaryotic Vectors (YAC and briefly PAC, MAC, HAC). Gene Cloning (Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCR-mediated gene cloning) Unit 3: Applications of Biotechnology Pest resistant (Bt-cotton); herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); edible vaccines; Industrial enzymes (Aspergillase, Protease, Lipase); Genetically Engineered Products— Human Growth Hormone; Humulin;	1 January 2018	19 May 2018
2	32161 602	Plant Biotechnology (PRACTICAL)	Core	Unit 5. Study of methods of gene transfer through photographs: <i>Agrobacterium</i> -mediated, direct gene transfer by electroporation, microinjection, microprojectile bombardment. Unit 6. Study of steps of genetic engineering for production of Bt cotton, Golden rice, Flavr Savr tomato through photographs. Unit 7. Isolation of plasmid DNA.	1 January 2018	19 May 2018

				Unit 8. Restriction digestion and gel electrophoresis of plasmid DNA.		
3	32161 401	Molecular Biology (PRACTICAL)	Core	Unit 1. Preparation of LB medium and raising <i>E.Coli</i> . Unit 2. Isolation of genomic DNA from <i>E.Coli</i> . Unit 3. DNA isolation from cauliflower head. Unit 4. DNA estimation by diphenylamine reagent/UV Spectrophotometry. Unit 5. Study of DNA replication mechanisms through photographs (Rolling circle, Theta replication and semi-discontinuous replication). Unit 6. Study of structures of prokaryotic RNA polymerase and eukaryotic RNA polymerase II through photographs. Unit 7. Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, Avery et al, Griffith's, Hershey & Chase's and Fraenkel & Conrat's experiments) Unit 8. Study of the following through photographs: Assembly of Spliceosome machinery; Splicing mechanism in group I & group II introns; Ribozyme and Alternative splicing. Pteridophytes	1 January 2018	19 May 2018

### **B. FDP/Seminar/Workshops/Lectures to be attended and/or to be conducted by Teachers**

1.

<b>Event Topic</b>	How to become a beaurocrat.
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	Seminar
<b>Organizing In-charge</b>	Dr. Sunil Kumar Dhiman
<b>Details regarding invited Resource Person</b>	Manoj Pingua (IAS)
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Participant

<b>Date/s</b>	August 2017	<b>Timing/s</b>	11.0 am to 12.0 am	<b>Mode</b>	Offline
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2.

<b>Event Topic</b>	Plant biotechnology				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	Seminar				
<b>Organizing In-charge</b>	Dr. Sunil Kumar Dhiman				
<b>Details regarding invited Resource Person</b>	Prof. Veena Agrawal				
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Participant				
<b>Date/s</b>	15 february 2018	<b>Timing/s</b>	11.0 am to 12.0 am	<b>Mode</b>	Offline

3.

<b>Event Topic</b>	Saviour of Earth				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	Seminar				
<b>Organizing In-charge</b>	Dr. Sunil Kumar Dhiman				
<b>Details regarding invited Resource Person</b>	Ravi kalra				
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Participated				
<b>Date/s</b>	19 Sep to 20 Sep 2019	<b>Timing/s</b>	11.0 am to 12.0 pm	<b>Mode</b>	Offline

4.

<b>Event Topic</b>	Functional genomics				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	Seminar				
<b>Organizing In-charge</b>	Dr. Sunil kumar dhiman				
<b>Details regarding invited Resource Person</b>	Dr. J.P.Muyal				
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Participant				
<b>Date/s</b>	29 August 2018	<b>Timing/s</b>	11.0 am to 12.0 am	<b>Mode</b>	Offline



**C. Internal Assessment: House Exam (Test/Presentation etc.) & Assignment\***

<b>Course Code</b>	<b>Course Name</b>	<b>Unique Paper Code</b>	<b>Topic Name</b>	<b>Day and Date</b>	<b>Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining</b>
556	B.Sc Botany (Hon) III Sem	32161303	Genetics	22 July 2017	24 October 2017
556	B.Sc Botany (Hon) IV Sem	32161401	Molecular Biology	12 Feb 2018	16 April 2018
556	B.Sc Botany (Hon) V Sem	32167502	Biostatistics	22 July 2017	24 October 2017
556	B.Sc Botany (Hon) V Sem	32167501	Analytical Techniques in Plant Sciences	22 July 2017	24 October 2017
556	B.Sc Botany (Hon) VI Sem	32167608	Bioinformatics	12 Feb 2018	16 April 2018
556	B.Sc Botany (Hon) VI Sem	32161602	Plant Biotechnology	12 Feb 2018	16 April 2018

**\*Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of every semester**

**Dr. Ram Babu**



## Botany Department

### I – Academic Planner

#### B. Teaching Plan (Year : 2018-2019 , Semester: Odd ( III, V))

Teacher's Name: Dr. Ram Babu Department: Botany

S . N o .	UPC	Paper Name	Core/AE CC/GE/S EC	Topic/Unit	Start Date	End Date
1	321675 02	Biostatistics (THEORY)	DSE	Unit 1:Biostatistics - definition - statistical methods - basic principles. Variables - measurements, functions, limitations and uses of statistics. Unit 2:Collection of data primary and secondary - types and methods of data collection procedures - merits and demerits. Classification - tabulation and presentation of data - sampling methods. Unit 3:Measures of central tendency - mean, median, mode, geometric mean - merits & demerits.	20 July 2018	16 Decem ber 2018
2	321675 02	Biostatistics (PRACTICAL)	DSE	1) Calculation of mean, standard deviation and standard error 2) Calculation of correlation coefficient values and finding out the probability 3) Calculation of 'F' value and finding out the probability value for the F value	20 July 2018	16 Decem ber 2018
3	321613 03	Genetics (PRACTICAL)	Core	Unit 7. Study of aneuploidy: Down's, Klinefelter's and Turner's syndromes. Unit 8. Photographs/Permanent Slides showing Translocation Ring, Laggards and Inversion Bridge. Unit 9. Study of human genetic traits: Sickle cell anemia, XerodermaPigmentosum, Albinism, red-green Colour blindness, Widow's peak, Rolling	20 July 2018	16 Decem ber 2018

				of tongue, Hitchhiker's thumb and Attached ear lobe.		
4	32167501	Analytical Techniques in Plant Sciences (THEORY)	DSE	<p>Unit 4: Spectrophotometry Principle and its application in biological research.</p> <p>Unit 5: Chromatography Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography.</p> <p>Unit 6: Characterization of proteins and nucleic acids Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE</p> <p>Unit 7: Biostatistics Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical; Measures of central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variation, standard deviation; Chi-square test for goodness of fit.</p>	20 July 2018	16 December 2018
5	32167501	Analytical Techniques in Plant Sciences (PRACTICAL)	DSE	<ol style="list-style-type: none"> <li>1. Study of Blotting techniques: Southern, Northern and Western, DNA fingerprinting, DNA sequencing, PCR through photographs.</li> <li>2. Demonstration of ELISA.</li> <li>3. To separate nitrogenous bases by paper chromatography.</li> <li>4. To separate sugars by thin layer chromatography.</li> <li>5. Isolation of chloroplasts by differential centrifugation.</li> <li>6. To separate chloroplast pigments by column chromatography.</li> <li>7. To estimate protein concentration through Lowry's methods.</li> </ol>	20 July 2018	16 December 2018

				<p>8. To separate proteins using PAGE.</p> <p>9. To separation DNA (marker) using AGE.</p> <p>10. Study of different microscopic techniques using photographs/micrographs (freeze fracture, freeze etching, negative staining, positive staining, fluorescence and FISH).</p> <p>11. Preparation of permanent slides (double staining).</p>		
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**B. Teaching Plan (Year : 2017-2018, Semester: Even ( IV, VI))**

**Teacher's Name: Dr. Ram Babu Department: Botany**

<b>S. No.</b>	<b>UPC</b>	<b>Paper Name</b>	<b>Core/AE CC/GE/SEC</b>	<b>Topic/Unit</b>	<b>Start Date</b>	<b>End Date</b>
<b>1</b>	32167 608	Bioinformatics (THEORY)	DSE	<p>Unit 1. Introduction to Bioinformatics Introduction, Branches of Bioinformatics, Aim, Scope and Research areas of Bioinformatics.</p> <p>Unit 2. Databases in Bioinformatics Introduction, Biological Databases, Classification format of Biological Databases, Biological Database Retrieval System.</p> <p>Unit 3. Biological Sequence Databases National Center for Biotechnology Information (NCBI): Tools and Databases of NCBI, Database Retrieval Tool, Sequence Submission to NCBI, Basic local alignment search tool (BLAST), Nucleotide Database, Protein Database, Gene Expression Database. EMBL Nucleotide Sequence Database (EMBL-Bank): Introduction, Sequence Retrieval, Sequence Submission to EMBL, Sequence analysis tools.</p>	1 January 2019	25 May 2019

1	32167 608	Bioinformatics (THEORY)	DSE	1. Nucleic acid and protein databases. 2. Sequence retrieval from databases. 3. Sequence alignment.	1 January 2019	25 May 2019
2	32161 602	Plant Biotechnology (THEORY)	Core	Unit 2: Recombinant DNA technology Restriction Endonucleases (History, Types I-IV, biological role and application); Restriction Mapping (Linear and Circular); Cloning Vectors: Prokaryotic (pUC 18 and pUC19, pBR322, Ti plasmid, BAC); Lambda phage, M13 phagemid, Cosmid, Shuttle vector; Eukaryotic Vectors (YAC and briefly PAC, MAC, HAC). Gene Cloning (Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCR-mediated gene cloning) Unit 3: Applications of Biotechnology Pest resistant (Bt-cotton); herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); edible vaccines; Industrial enzymes (Aspergillase, Protease, Lipase); Genetically Engineered Products— Human Growth Hormone; Humulin;	1 January 2019	25 May 2019
2	32161 602	Plant Biotechnology (PRACTICAL)	Core	Unit 5. Study of methods of gene transfer through photographs: <i>Agrobacterium</i> -mediated, direct gene transfer by electroporation, microinjection, microprojectile bombardment. Unit 6. Study of steps of genetic engineering for production of Bt cotton, Golden rice, Flavr Savr tomato through photographs. Unit 7. Isolation of plasmid DNA.	1 January 2019	25 May 2019

				Unit 8. Restriction digestion and gel electrophoresis of plasmid DNA.		
3	32161 401	Molecular Biology (PRACTICAL)	Core	Unit 1. Preparation of LB medium and raising <i>E.Coli</i> . Unit 2. Isolation of genomic DNA from <i>E.Coli</i> . Unit 3. DNA isolation from cauliflower head. Unit 4. DNA estimation by diphenylamine reagent/UV Spectrophotometry. Unit 5. Study of DNA replication mechanisms through photographs (Rolling circle, Theta replication and semi-discontinuous replication). Unit 6. Study of structures of prokaryotic RNA polymerase and eukaryotic RNA polymerase II through photographs. Unit 7. Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, Avery et al, Griffith's, Hershey & Chase's and Fraenkel & Conrat's experiments) Unit 8. Study of the following through photographs: Assembly of Spliceosome machinery; Splicing mechanism in group I & group II introns; Ribozyme and Alternative splicing. Pteridophytes	1 January 2019	25 May 2019

#### **D. FDP/Seminar/Workshops/Lectures to be attended and/or to be conducted by Teachers**

1.

<b>Event Topic</b>	Microbes and Nanotechnology for Sustainable Environment
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	National Symposium
<b>Organizing In-charge</b>	Dr. Rajni Gupta
<b>Details regarding invited Resource Person</b>	External

<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Participated and acted as organizing member			
<b>Date/s</b>	7 February 2019	<b>Timing/s</b>	9.0 am to 4.0 pm	<b>Mode</b>	Offline

2.

<b>Event Topic</b>		One day workshop on "Basic Laboratory Techniques " for Non Teaching Staff			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		Workshop			
<b>Organizing In-charge</b>		Dr. Renu Kathpalia			
<b>Details regarding invited Resource Person</b>		College Teachers			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Organizing member			
<b>Date/s</b>	12 July 2019	<b>Timing/s</b>	9.0 am to 4.0 pm	<b>Mode</b>	Offline

3.

<b>Event Topic</b>		<b>Basic Biochemical and Microbial techniques</b>			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		Workshop			
<b>Organizing In-charge</b>		Dr. Renu kathpaliya			
<b>Details regarding invited Resource Person</b>		Department teachers			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Organizing member			
<b>Date/s</b>	24 june to 05 july 2019	<b>Timing/s</b>	10.0 am to 3.0 pm	<b>Mode</b>	Offline

**E. Internal Assessment: House Exam (Test/Presentation etc.) & Assignment\***

<b>Course Code</b>	<b>Course Name</b>	<b>Unique Paper Code</b>	<b>Topic Name</b>	<b>Day and Date</b>	<b>Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining</b>
556	B.Sc Botany (Hon) III Sem	32161303	Genetics	26 Aug 2018	25 October 2018
556	B.Sc Botany (Hon) IV Sem	32161401	Molecular Biology	12 Feb 2019	12 April 2019
556	B.Sc Botany (Hon) V Sem	32167502	Biostatistics	26 Aug 2018	25 October 2018
556	B.Sc Botany (Hon) V Sem	32167501	Analytical Techniques in Plant Sciences	26 Aug 2018	25 October 2018
556	B.Sc Botany (Hon) VI Sem	32167608	Bioinformatics	12 Feb 2019	12 April 2019
556	B.Sc Botany (Hon) VI Sem	32161602	Plant Biotechnology	12 Feb 2019	12 April 2019

**\*Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of every semester**

**Dr. Ram Babu**

## Botany Department

### I – Academic Planner

#### C. Teaching Plan (Year : 2019-2020 , Semester: Odd ( III, V))

Teacher's Name: Dr. Ram Babu Department: Botany

S . N o .	UPC	Paper Name	Core/AE CC/GE/S EC	Topic/Unit	Start Date	End Date
1	321675 02	Biostatistics (THEORY)	DSE	Unit 1:Biostatistics - definition - statistical methods - basic principles. Variables - measurements, functions, limitations and uses of statistics. Unit 2:Collection of data primary and secondary - types and methods of data collection procedures - merits and demerits. Classification - tabulation and presentation of data - sampling methods. Unit 3:Measures of central tendency - mean, median, mode, geometric mean - merits & demerits.	20 July 2019	16 Decemb er 2019
2	321675 02	Biostatistics (PRACTICAL)	DSE	1) Calculation of mean, standard deviation and standard error 2) Calculation of correlation coefficient values and finding out the probability 3) Calculation of 'F' value and finding out the probability value for the F value	20 July 2019	16 Decemb er 2019
3	321613 03	Genetics (PRACTICAL)	Core	Unit 7. Study of aneuploidy: Down's, Klinefelter's and Turner's syndromes. Unit 8. Photographs/Permanent Slides showing Translocation Ring, Laggards and Inversion Bridge.	20 July 2019	16 Decemb er 2019



				Unit 9. Study of human genetic traits: Sickle cell anemia, Xeroderma Pigmentosum, Albinism, red-green Colour blindness, Widow's peak, Rolling of tongue, Hitchhiker's thumb and Attached ear lobe.		
4	32167501	Analytical Techniques in Plant Sciences (THEORY)	DSE	Unit 4: Spectrophotometry Principle and its application in biological research. Unit 5: Chromatography Principle; Paper chromatography; Column chromatography, TLC, GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography. Unit 6: Characterization of proteins and nucleic acids Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE Unit 7: Biostatistics Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical; Measures of central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variation, standard deviation; Chi-square test for goodness of fit.	20 July 2019	16 December 2019
5	32167501	Analytical Techniques in Plant Sciences (PRACTICAL)	DSE	1. Study of Blotting techniques: Southern, Northern and Western, DNA fingerprinting, DNA sequencing, PCR through photographs. 2. Demonstration of ELISA. 3. To separate nitrogenous bases by paper chromatography.	20 July 2019	16 December 2019

				<p>4. To separate sugars by thin layer chromatography.</p> <p>5. Isolation of chloroplasts by differential centrifugation.</p> <p>6. To separate chloroplast pigments by column chromatography.</p> <p>7. To estimate protein concentration through Lowry's methods.</p> <p>8. To separate proteins using PAGE.</p> <p>9. To separation DNA (marker) using AGE.</p> <p>10. Study of different microscopic techniques using photographs/micrographs (freeze fracture, freeze etching, negative staining, positive staining, fluorescence and FISH).</p> <p>11. Preparation of permanent slides (double staining).</p>		
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**C. Teaching Plan (Year : 2019-2020, Semester: Even ( IV, VI))**

**Teacher's Name: Dr. Ram Babu Department: Botany**

<b>S. No.</b>	<b>UPC</b>	<b>Paper Name</b>	<b>Core/AE CC/GE/SEC</b>	<b>Topic/Unit</b>	<b>Start Date</b>	<b>End Date</b>
<b>1</b>	32167608	Bioinformatics (THEORY)	DSE	<p>Unit 1. Introduction to Bioinformatics Introduction, Branches of Bioinformatics, Aim, Scope and Research areas of Bioinformatics.</p> <p>Unit 2. Databases in Bioinformatics Introduction, Biological Databases, Classification format of Biological Databases, Biological Database Retrieval System.</p> <p>Unit 3. Biological Sequence Databases National Center for Biotechnology Information (NCBI): Tools and Databases of NCBI, Database</p>	1 January 2020	25 May 2020

				Retrieval Tool, Sequence Submission to NCBI, Basic local alignment search tool (BLAST), Nucleotide Database, Protein Database, Gene Expression Database. EMBL Nucleotide Sequence Database (EMBL-Bank): Introduction, Sequence Retrieval, Sequence Submission to EMBL, Sequence analysis tools.		
1	32167608	Bioinformatics (THEORY)	DSE	1. Nucleic acid and protein databases. 2. Sequence retrieval from databases. 3. Sequence alignment.	1 January 2020	25 May 2020
2	32161602	Plant Biotechnology (THEORY)	Core	Unit 2: Recombinant DNA technology Restriction Endonucleases (History, Types I-IV, biological role and application); Restriction Mapping (Linear and Circular); Cloning Vectors: Prokaryotic (pUC 18 and pUC19, pBR322, Ti plasmid, BAC); Lambda phage, M13 phagemid, Cosmid, Shuttle vector; Eukaryotic Vectors (YAC and briefly PAC, MAC, HAC). Gene Cloning (Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCR-mediated gene cloning) Unit 3: Applications of Biotechnology Pest resistant (Bt-cotton); herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); edible vaccines; Industrial enzymes (Aspergillase, Protease, Lipase); Genetically Engineered Products— Human Growth Hormone; Humulin;	1 January 2020	25 May 2020

2	32161 602	Plant Biotechno logy (PRACTI CAL)	Core	<p>Unit 5. Study of methods of gene transfer through photographs: <i>Agrobacterium</i>-mediated, direct gene transfer by electroporation, microinjection, microprojectile bombardment.</p> <p>Unit 6. Study of steps of genetic engineering for production of Bt cotton, Golden rice, Flavr Savr tomato through photographs.</p> <p>Unit 7. Isolation of plasmid DNA.</p> <p>Unit 8. Restriction digestion and gel electrophoresis of plasmid DNA.</p>	1 Januar y 2020	25 May 2020
3	32161 401	Molecular Biology (PRACTI CAL)	Core	<p>Unit 1. Preparation of LB medium and raising <i>E.Coli</i>.</p> <p>Unit 2. Isolation of genomic DNA from <i>E.Coli</i>.</p> <p>Unit 3. DNA isolation from cauliflower head.</p> <p>Unit 4. DNA estimation by diphenylamine reagent/UV Spectrophotometry.</p> <p>Unit 5. Study of DNA replication mechanisms through photographs (Rolling circle, Theta replication and semi-discontinuous replication).</p> <p>Unit 6. Study of structures of prokaryotic RNA polymerase and eukaryotic RNA polymerase II through photographs.</p> <p>Unit 7. Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, Avery et al, Griffith's, Hershey &amp; Chase's and Fraenkel &amp; Conrat's experiments)</p> <p>Unit 8. Study of the following through photographs: Assembly of Spliceosome machinery; Splicing mechanism in group I &amp; group II introns; Ribozyme and Alternative splicing. Pteridophytes</p>	1 Januar y 2020	25 May 2020

**F. FDP/Seminar/Workshops/Lectures to be attended  
and/or to be conducted by Teachers**

1.

<b>Event Topic</b>		<b>Role of Plant Research in gravity free environment”</b>			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		Seminar			
<b>Organizing In-charge</b>		Dr. Ram babu			
<b>Details regarding invited Resource Person</b>		Prof. B.C. Tripathi, Jawaharlal Nehru University and Ex Vice-Chancellor, Ravenshaw University, Odisha			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Participated and acted as organizing member			
<b>Date/s</b>	<b>6th September 2019</b>	<b>Timing/s</b>	10.0 am to 11.0 pm	<b>Mode</b>	Offline

2.

<b>Event Topic</b>		<b>Two day workshop on " DNA Barcoding and Metagenomics</b>			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		Workshop			
<b>Organizing In-charge</b>		Dr. Renu Kathpalia			
<b>Details regarding invited Resource Person</b>		Prof. S.B. Babbar, University of Delhi, Prof. Sudeshna Mazumdar Leighton, University of Delhi, Dr. Geetanjali Yadav, Scientist from NIPGR and lecturer at Cambridge University			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Participated and acted as organizing member			
<b>Date/s</b>	<b>19<sup>th</sup> to 20<sup>th</sup> September 2019</b>	<b>Timing/s</b>	9.0 am to 4.0 pm	<b>Mode</b>	Offline

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**Internal Assessment: House Exam (Test/Presentation etc.)  
&Assignment\***

<b>Course Code</b>	<b>Course Name</b>	<b>Unique Paper Code</b>	<b>Topic Name</b>	<b>Day and Date</b>	<b>Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks,</b>

					<b>Returning/Reta ining</b>
556	B.Sc Botany (Hon) III Sem	32161303	Genetics	26 Aug 2019	23 October 2019
556	B.Sc Botany (Hon) IV Sem	32161401	Molecular Biology	12 Feb 2020	12 April 2020
556	B.Sc Botany (Hon) V Sem	32167502	Biostatistics	26 Aug 2019	23 October 2019
556	B.Sc Botany (Hon) V Sem	32167501	Analytical Techniques in Plant Sciences	26 Aug 2019	23 October 2019
556	B.Sc Botany (Hon) VI Sem	32167608	Bioinformatics	12 Feb 2020	12 April 2020
556	B.Sc Botany (Hon) VI Sem	32161602	Plant Biotechnology	12 Feb 2020	12 April 2020

**\*Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of every semester**

**Dr. Ram Babu  
Botany Department**

### **I – Academic Planner**

**D. Teaching Plan (Year : 2020-2021 , Semester: Odd ( III, V))**

**Teacher's Name: Dr. Ram Babu Department: Botany**

<b>S · N</b>	<b>UPC</b>	<b>Paper Name</b>	<b>Core/AE CC/GE/S EC</b>	<b>Topic/Unit</b>	<b>Start Date</b>	<b>End Date</b>
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0						
1	32167502	Biostatistics (THEORY)	DSE	<p>Unit 1: Biostatistics - definition - statistical methods - basic principles. Variables - measurements, functions, limitations and uses of statistics.</p> <p>Unit 2: Collection of data primary and secondary - types and methods of data collection procedures - merits and demerits. Classification - tabulation and presentation of data - sampling methods.</p> <p>Unit 3: Measures of central tendency - mean, median, mode, geometric mean - merits &amp; demerits.</p>	20 Aug 2020	16 December 2020
2	32167502	Biostatistics (PRACTICAL)	DSE	<p>1) Calculation of mean, standard deviation and standard error</p> <p>2) Calculation of correlation coefficient values and finding out the probability</p> <p>3) Calculation of 'F' value and finding out the probability value for the F value</p>	20 Aug 2020	16 December 2020
3	32161303	Genetics (PRACTICAL)	Core	<p>Unit 7. Study of aneuploidy: Down's, Klinefelter's and Turner's syndromes.</p> <p>Unit 8. Photographs/Permanent Slides showing Translocation Ring, Laggards and Inversion Bridge.</p> <p>Unit 9. Study of human genetic traits: Sickle cell anemia, Xeroderma Pigmentosum, Albinism, red-green Colour blindness, Widow's peak, Rolling of tongue, Hitchhiker's thumb and Attached ear lobe.</p>	20 July 2020	16 December 2020
4	32167501	Analytical Techniques in Plant Sciences	DSE	<p>Unit 4: Spectrophotometry Principle and its application in biological research.</p> <p>Unit 5: Chromatography Principle; Paper chromatography; Column</p>	20 July 2020	16 December 2020

		(THEORY)		<p>chromatography, TLC, GLC, HPLC, Ion-exchange chromatography; Molecular sieve chromatography; Affinity chromatography.</p> <p>Unit 6: Characterization of proteins and nucleic acids Mass spectrometry; X-ray diffraction; X-ray crystallography; Characterization of proteins and nucleic acids; Electrophoresis: AGE, PAGE, SDS-PAGE</p> <p>Unit 7: Biostatistics Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical; Measures of central tendency: Arithmetic mean, mode, median; Measures of dispersion: Range, mean deviation, variation, standard deviation; Chi-square test for goodness of fit.</p>		
5	32167501	Analytical Techniques in Plant Sciences (PRACTICAL)	DSE	<ol style="list-style-type: none"> <li>1. Study of Blotting techniques: Southern, Northern and Western, DNA fingerprinting, DNA sequencing, PCR through photographs.</li> <li>2. Demonstration of ELISA.</li> <li>3. To separate nitrogenous bases by paper chromatography.</li> <li>4. To separate sugars by thin layer chromatography.</li> <li>5. Isolation of chloroplasts by differential centrifugation.</li> <li>6. To separate chloroplast pigments by column chromatography.</li> <li>7. To estimate protein concentration through Lowry's methods.</li> <li>8. To separate proteins using PAGE.</li> <li>9. To separation DNA (marker) using AGE.</li> </ol>	20 July 2020	16 December 2020



				<p>10. Study of different microscopic techniques using photographs/micrographs (freeze fracture, freeze etching, negative staining, positive staining, fluorescence and FISH).</p> <p>11. Preparation of permanent slides (double staining).</p>		
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**D. Teaching Plan (Year : 2019-2020, Semester: Even ( IV, VI))**

**Teacher's Name: Dr. Ram Babu Department: Botany**

<b>S. No.</b>	<b>UPC</b>	<b>Paper Name</b>	<b>Core/AE CC/GE/SEC</b>	<b>Topic/Unit</b>	<b>Start Date</b>	<b>End Date</b>
<b>1</b>	32167 608	Bioinformatics (THEORY)	DSE	<p>Unit 1. Introduction to Bioinformatics Introduction, Branches of Bioinformatics, Aim, Scope and Research areas of Bioinformatics.</p> <p>Unit 2. Databases in Bioinformatics Introduction, Biological Databases, Classification format of Biological Databases, Biological Database Retrieval System.</p> <p>Unit 3. Biological Sequence Databases National Center for Biotechnology Information (NCBI): Tools and Databases of NCBI, Database Retrieval Tool, Sequence Submission to NCBI, Basic local alignment search tool (BLAST), Nucleotide Database, Protein Database, Gene Expression Database. EMBL Nucleotide Sequence Database (EMBL-Bank): Introduction, Sequence Retrieval, Sequence Submission to EMBL, Sequence analysis tools.</p>	2 January 2021	25 May 2021
<b>1</b>	32167 608	Bioinformatics	DSE	1. Nucleic acid and protein databases.	2 January	25 May 2021

		(THEORY)		2. Sequence retrieval from databases. 3. Sequence alignment.	y 2021	
2	32161 602	Plant Biotechnology (THEORY)	Core	Unit 2: Recombinant DNA technology Restriction Endonucleases (History, Types I-IV, biological role and application); Restriction Mapping (Linear and Circular); Cloning Vectors: Prokaryotic (pUC 18 and pUC19, pBR322, Ti plasmid, BAC); Lambda phage, M13 phagemid, Cosmid, Shuttle vector; Eukaryotic Vectors (YAC and briefly PAC, MAC, HAC). Gene Cloning (Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCR-mediated gene cloning) Unit 3: Applications of Biotechnology Pest resistant (Bt-cotton); herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); edible vaccines; Industrial enzymes (Aspergillase, Protease, Lipase); Genetically Engineered Products– Human Growth Hormone; Humulin;	2 January 2021	25 May 2021
2	32161 602	Plant Biotechnology (PRACTICAL)	Core	Unit 5. Study of methods of gene transfer through photographs: <i>Agrobacterium</i> -mediated, direct gene transfer by electroporation, microinjection, microprojectile bombardment. Unit 6. Study of steps of genetic engineering for production of Bt cotton, Golden rice, Flavr Savr tomato through photographs. Unit 7. Isolation of plasmid DNA. Unit 8. Restriction digestion and gel electrophoresis of plasmid DNA.	2 January 2020	25 May 2020

3	32161 401	Molecular Biology (PRACTI CAL)	Core	<p>Unit 1. Preparation of LB medium and raising <i>E.Coli</i>.</p> <p>Unit 2. Isolation of genomic DNA from <i>E.Coli</i>.</p> <p>Unit 3. DNA isolation from cauliflower head.</p> <p>Unit 4. DNA estimation by diphenylamine reagent/UV Spectrophotometry.</p> <p>Unit 5. Study of DNA replication mechanisms through photographs (Rolling circle, Theta replication and semi-discontinuous replication).</p> <p>Unit 6. Study of structures of prokaryotic RNA polymerase and eukaryotic RNA polymerase II through photographs.</p> <p>Unit 7. Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, Avery et al, Griffith's, Hershey &amp; Chase's and Fraenkel &amp; Conrat's experiments)</p> <p>Unit 8. Study of the following through photographs: Assembly of Spliceosome machinery; Splicing mechanism in group I &amp; group II introns; Ribozyme and Alternative splicing. Pteridophytes</p>	2 Januar y 2020	25 May 2020
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**A. Department activities for students –**

**Election/Freshers/Welcome/Farewell/Department Seminars/Society functions**

Event	Date	Event In-charge / Supervisor
<b>Webinar</b> on “ <b>Colours in Naturez</b> ” by Dr Gita Mathur, Associate Professor (Retd.), Gargi College, University of Delhi	22 <sup>nd</sup> August, 2020	Dr. Renu Kathpalia
<b>Webinar</b> on “ <b>Machine Learning.</b> ” by Dr. Gitanjali Yadav, Scientist from NIPGR and lecturer at Cambridge University	4 <sup>th</sup> Septmeber, 2020	Dr. Renu Kathpalia
“ <b>Career as Indian Forest Services</b> ” by Mr. Ankit Kumar, IFS	3 <sup>rd</sup> November, 2020	Dr. Renu Kathpalia

<p><b>Two-day workshop for students on “Carbon Sequestration &amp; Solid Waste Management A Perspective”</b></p> <ul style="list-style-type: none"> <li>• Solid Waste Management- Dr. Lata, IARI</li> <li>• Technological Interventions in Carbon &amp; Solid Waste Management-Dr. Ratul , Dept. of Botany , University of Delhi</li> </ul>	5-8 <sup>th</sup> November, 2020	Dr. Renu Kathpalia
<b>Lecture on “IPR”</b> by Mr. Saurabh Anand, Advocate.	12 <sup>th</sup> November, 2020	Prof. Rajni Gupta
Academic <b>Orientation</b> for fresh batch (2020-21) of B.Sc. Botany (Hons) and Life Science	18 <sup>th</sup> & 19 <sup>th</sup> November, 2020	Dr. Rambabu & Dr. Sunil Dhiman
Event	Date	Event In-charge / Supervisor
<b>Republic Day</b>	25 <sup>th</sup> January, 2021	Dr. Sunil Dhiman
<b>Lecture on “Plant Systematics”</b> by Dr. Prithipal Singh, former Associate Professor at Department of Botany, KMC,	20 <sup>th</sup> February, 2021	Prof. Rajni Gupta
<b>Inaugural Lecture on “Restoration Ecology and Resetting Our Relation with Nature”</b> by Mr. Kunal Satyarthi, IFS, alumnus of KMC	22 <sup>nd</sup> March, 2021	Dr. Sunil Dhiman
<b>Botanical Fest “Shrishti”</b>	5 <sup>th</sup> and 6 <sup>th</sup> April, 2021	Dr. Sunil Dhiman
<b>Webinar on “Employment and Entrepreneurship in field of Mushroom”</b> by Ms Monika Choudhary, Chief Agriculturist at “The Mushroom Hub”	16 <sup>th</sup> April, 2021	Prof. Rajni Gupta
<b>Earth Day Celebration</b> (Inter College Quiz, poster making and Minute Mania)	22 <sup>nd</sup> April, 2021	Dr. Renu Kathpalia
<b>Lecture on “Ecological Entrepreneurship for diversity and Designing the New Earth ”</b> by Prof. Radhey Shyam Sharma, Department of Environmental Studies, Laboratory of Bioresources and Environmental Biotechnology, University of Delhi	5 <sup>th</sup> June, 2021	Prof. Rajni Gupta

<b>Lecture on “Understanding Mucormycosis and its Relevance during Covid-19 Pandemic”</b> by Prof. Rupam Kapoor, Department of Botany, University of Delhi	22 <sup>nd</sup> June, 2021	Prof. Rajni Gupta
<b>Farewell</b> to third year students of B.Sc. Botany (Hons) 2018-2020 batch	26 <sup>th</sup> June, 2021	Dr. Renu Kathpalia
Seven-day campaign <b>“The Green Side Movement”</b> on the occasion of <b>Van Mahotsav</b>	3 <sup>rd</sup> -9 <sup>th</sup> July, 2021	Prof. Rajni Gupta
Two-days <b>Students Workshop</b> on <b>“Applications of Bioinformatics for Pedagogy of Plant Sciences</b>	22 <sup>nd</sup> -23 <sup>rd</sup> July, 2021	Dr. Renu Kathpalia and Prof. Rajni Gupta

## B. FDP/Seminar/Workshops/Lectures to be attended and/or to be conducted

1.

<b>Event Topic</b>	Webinar on <b>“Colours in Nature”</b>				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	<b>Webinar</b>				
<b>Organizing In-charge</b>	Prof. Rajni Gupta & Dr. Renu Kathpalia				
<b>Details regarding invited Resource Person</b>	Dr. Gita Mathur, Associate Professor (Retd.) Gargi College, University of Delhi				
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Students				
<b>Date/s</b>	22 <sup>nd</sup> August, 2020	<b>Timing/s</b>	3.00 pm	<b>Mode</b>	Online at G-Meet

2

<b>Event Topic</b>	Webinar on <b>“Machine Learning.”</b> by Dr. Gitanjali Yadav				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	<b>Webinar</b>				
<b>Organizing In-charge</b>	Dr. Renu Kathpalia				
<b>Details regarding invited Resource Person</b>	<b>Dr. Gitanjali Yadav</b> , Scientist at NIPGR and lecturer, Cambridge University				
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Students				
<b>Date/s</b>	4 Sep 2020	<b>Timing/s</b>	4.30 pm	<b>Mode</b>	Online at MST

3.

<b>Event Topic</b>		Innovations in Scientific Research Method			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		<b>FDP</b>			
<b>Organizing In-charge</b>		Dr. Renu Kathpalia			
<b>Details regarding invited Resource Person</b>		Prof. Diwan S. Rawat Department of Chemistry, University of Delhi Dr. Nipun Arora, Assistant Professor, Department of Mechanical Engineering, IIT, Jodhpur Dr. Balram Pani, Dean of College, Principal, Bhaskaracharya College of Applied Sciences, University of Delhi Prof. Paramjit Khurana, Department of Plant Molecular Biology, University of Delhi			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Teachers and Research Scholars			
<b>Date/s</b>	14-18 Oct 2020	<b>Timing/s</b>	4.0 -6.0 pm	<b>Mode</b>	Online at G Meet

4.

<b>Event Topic</b>		Carbon Sequestration & Solid Waste Management A Perspective			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		<b>Workshop</b>			
<b>Organizing In-charge</b>		Dr. Renu Kathpalia & Prof. Rajni Gupta			
<b>Details regarding invited Resource Person</b>		<ul style="list-style-type: none"> <li>• <b>Dr. Lata</b>, IARI</li> <li>• <b>Dr. Ratul Bhaishya</b>, Dept. of Botany, University of Delhi</li> </ul>			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Students			
<b>Date/s</b>	5-8 <sup>th</sup> Nov 2020	<b>Timing/s</b>	4.0 -6.0 pm	<b>Mode</b>	Online at G- Meet

5

<b>Event Topic</b>		Career on Indian Forest Services by Mr. Ankit Kumar, IFS			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		<b>Webinar</b>			
<b>Organizing In-charge</b>		Dr. Renu Kathpalia			
<b>Details regarding invited Resource Person</b>		<b>Mr. Ankit Kumar</b> , IFS Officer and alumnus of KMC			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Students			
<b>Date/s</b>	3 Nov 2020	<b>Timing/s</b>	4.0 pm	<b>Mode</b>	Online at G- Meet

6.

<b>Event Topic</b>	Intellectual Property Rights				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	<b>Webinar</b>				
<b>Organizing In-charge</b>	Prof. Rajni Gupta				
<b>Details regarding invited Resource Person</b>	<b>Mr. Saurabh</b> , Advocate and alumnus of KMC				
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Students				
<b>Date/s</b>	3 Nov 2020	<b>Timing/s</b>	3.0 pm	<b>Mode</b>	Online at G- Meet

7.

<b>Event Topic</b>	<b>Plant Systematics</b>				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	<b>Lecture</b>				
<b>Organizing In-charge</b>	Prof. Rajni Gupta				
<b>Details regarding invited Resource Person</b>	<b>Dr. Prithipal Singh</b> , former Associate Professor at Department of Botany, KMC				
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Students and teachers				
<b>Date/s</b>	20 February 2021	<b>Timing/s</b>	3.0 pm	<b>Mode</b>	Online at G- Meet

8.

<b>Event Topic</b>	Restoration Ecology and Resetting Our Relation				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	<b>Lecture</b>				
<b>Organizing In-charge</b>	Dr. Sunil Dhiman				
<b>Details regarding invited Resource Person</b>	<b>Mr. Kunal Satyarthi</b> , IFS, alumnus of KMC				
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Students and teachers				
<b>Date/s</b>	22 March 2021	<b>Timing/s</b>	10.0 am	<b>Mode</b>	Online at G- Meet

9.

<b>Event Topic</b>	Employment and Entrepreneurship in field of Mushroom				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	<b>Webinar</b>				

<b>Organizing In-charge</b>		Prof. Rajni Gupta & Dr. Renu Kathpalia			
<b>Details regarding invited Resource Person</b>		<b>Ms Monika Choudhary</b> , Chief Agriculturist at “The Mushroom Hub”			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Students and teachers			
<b>Date/s</b>	16 April 2021	<b>Timing/s</b>	3.0 pm	<b>Mode</b>	Online at G- Meet

10.

<b>Event Topic</b>		Ecological Entrepreneurship for diversity and Designing the New Earth			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		<b>Lecture</b>			
<b>Organizing In-charge</b>		Prof. Rajni Gupta & Dr. Renu Kathpalia			
<b>Details regarding invited Resource Person</b>		<b>Prof. Radhey Shyam Sharma</b> , Department of Environmental Studies, Laboratory of Bioresources and Environmental Biotechnology, University of Delhi			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Students and teachers			
<b>Date/s</b>	5 <sup>th</sup> June, 2021	<b>Timing/s</b>	3.0 pm	<b>Mode</b>	Online at G- Meet

11.

<b>Event Topic</b>		Understanding Mucor mycosis and its Relevance during Covid-19 Pandemic			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		<b>Lecture</b>			
<b>Organizing In-charge</b>		Prof. Rajni Gupta			
<b>Details regarding invited Resource Person</b>		<b>Prof. Rupam Kapoor</b> , Department of Botany, University of Delhi			
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>		Students and teachers			
<b>Date/s</b>	22 June 2021	<b>Timing/s</b>	3.0 pm	<b>Mode</b>	Online at G- Meet

12.

<b>Event Topic</b>		<b>Environmental Audit</b>			
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>		<b>FDP</b>			
<b>Organizing In-charge</b>		Dr. Renu Kathpalia			



**Details regarding invited Resource Person**

- **Prof. Vibha Dhawan**, DG, TERI.
- **Prof. Mohanraj Rangaswamy**, Head of Department, Dept. of Environmental Management, Bharathidasan University.
- **Mr. Manmeet Rathore**, ESG, Impact Investment.
- **Mr. Sanjay Kumar Jha**, IA&AS, DG, Audit (Environment & Scientific Department), CAG Office
- **Dr. Anil Kumar**, Ex-Director, Department of Environment, Govt. of Delhi.
- **Dr. D.R. Ravi**, Environment Officer, KSCP.
- Ms. Karishma Bisht, Additional Director, FICCI, Delhi
- **Dr. Anil P. Joshi**, Founder, Himalayan Environmental studies Conservation Organization (HESCO).
- **Mr Puneet Kaushik**, Founder Director, EHS Alliance Services
- **Ms. Shweta Chahar**, Project Consultant, AECOM
- **Mr. Sushil Kumar Sharma**, ex-GM, NTPC.
- **Prof. Vandana Mishra**, Environmental Studies, DU.
- **Prof. A.K. Nema**, IIT, New Delhi
- **Dr. Bhuvan Chopra**.
- **Dr. M. Dwarakanath**,. Ex-Director, DST, Govt. of Puducherry.
- **CA. Amarjit Chopra**, Ex-President, ICAI.
- **Mr. M.A Patil**, Sr. Director, FICCI. Delhi.
- Mr Manish Raj
- **Dr. Ratul Baishya**, Department of Botany, University of Delhi
- Mr. J. S. Kamyotra, Member Secretary, CPCB, New Delhi.
- **Dr. S. Krishna Bharathi**, TUV Rheinland Middle East office, Dubai.
- **Dr. Anumita Roy Chowdhury**, Executive Director, Centre for Science & Environment.
- **Mr. Rajiv Ranjan Mishra**, DG, National Mission on Clean Ganga.
- **Prof. Lokanath Mishra**, Director, FDC, Mizoram University.

**Nature of Participation (e.g. Invited Speaker, Participant etc.)**

Teachers

<b>Date/s</b>	<b>28 June -2 July 2021</b>	<b>Timing/s</b>	10.0 am – 5.0 pm	<b>Mode</b>	Online at G- Meet
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13.

<b>Event Topic</b>	<b>“Applications of Bioinformatics for Pedagogy of Plant Sciences”</b>				
<b>Type / Nature (FDP/Webinar/Workshop etc.)</b>	<b>Workshop</b>				
<b>Organizing In-charge</b>	Dr. Renu Kathpalia & Prof. Rajni Gupta				
<b>Details regarding invited Resource Person</b>	<ul style="list-style-type: none"> <li>• <b>Dr. Hemant Ritturaj Kushwaha</b>, School of Biotechnology, Jawahar Lal Nehru University</li> <li>• <b>Prof. Sudeshna Mazumdar Leighton</b>, Department of Botany, University of Delhi</li> </ul>				
<b>Nature of Participation (e.g. Invited Speaker, Participant etc.)</b>	Students				
<b>Date/s</b>	<b>22-23 July 2021</b>	<b>Timing/s</b>	3.0 pm	<b>Mode</b>	Online at Zoom

#### **FIELD VISITS / OUTSTATION TRIP**

- The Department. of Botany under the guidance of Prof. Rajni Gupta organized a **virtual visit to HAIC, Murthal on 9<sup>th</sup> April 2021**. The tour was organized under the "Field trip" project of Skill Enhancement Paper "Mushroom Cultivation" and DSE paper “Industrial and Environmental Microbiology” for 2nd and 3rd yr students of B.Sc. Botany (Hons).

