

					Returning/Reta ining
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

S · N	UPC	Paper Name	Core/AE CC/GE/S EC	Topic/Unit	Start Date	End Date
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1	321675 02	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 & demerits.</p>	20 Aug 2020	16 December 2020
2	321675 02	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	321613 03	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	321675 01	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"> 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. 4. To separate sugars by thin layer chromatography. 5. Isolation of chloroplasts by differential centrifugation. 6. To separate chloroplast pigments by column chromatography. 7. To estimate protein concentration through Lowry's methods. 8. To separate proteins using PAGE. 9. To separation DNA (marker) using AGE. 	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

S. No.	UPC	Paper Name	Core/AE CC/GE/S EC	Topic/Unit	Start Date	End Date
1	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
1	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 & Chase's and Fraenkel & Conrat's experiments)</p> <p>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</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
Webinar on “Colours in Naturez” by Dr Gita Mathur, Associate Professor (Retd.), Gargi College, University of Delhi	22 nd August, 2020	Dr. Renu Kathpalia
Webinar on “Machine Learning.” by Dr. Gitanjali Yadav, Scientist from NIPGR and lecturer at Cambridge University	4 th Septmeber, 2020	Dr. Renu Kathpalia
“Career as Indian Forest Services” by Mr. Ankit Kumar, IFS	3 rd November, 2020	Dr. Renu Kathpalia

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

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

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

1.

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

2

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

3.

Event Topic		Innovations in Scientific Research Method			
Type / Nature (FDP/Webinar/Workshop etc.)		FDP			
Organizing In-charge		Dr. Renu Kathpalia			
Details regarding invited Resource Person		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			
Nature of Participation (e.g. Invited Speaker, Participant etc.)		Teachers and Research Scholars			
Date/s	14-18 Oct 2020	Timing/s	4.0 -6.0 pm	Mode	Online at G Meet

4.

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

5

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

6.

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

7.

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

8.

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

9.

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

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

10.

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

11.

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

12.

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

<p>Details regarding invited Resource Person</p>	<ul style="list-style-type: none"> • 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.
<p>Nature of Participation (e.g. Invited Speaker, Participant etc.)</p>	<p>Teachers</p>

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

Event Topic	“Applications of Bioinformatics for Pedagogy of Plant Sciences”				
Type / Nature (FDP/Webinar/Workshop etc.)	Workshop				
Organizing In-charge	Dr. Renu Kathalia & Prof. Rajni Gupta				
Details regarding invited Resource Person	<ul style="list-style-type: none"> • Dr. Hemant Ritturaj Kushwaha, School of Biotechnology, Jawahar Lal Nehru University • Prof. Sudeshna Mazumdar Leighton, Department of Botany, University of Delhi 				
Nature of Participation (e.g. Invited Speaker, Participant etc.)	Students				
Date/s	22-23 July 2021	Timing/s	3.0 pm	Mode	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 9th 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).