



# *Kalindi College*

(NAAC Accredited 'A' Grade)

University Of Delhi



***DEPARTMENT OF BOTANY***

***ACADEMIC SESSION***

***2020-21***



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## 1. Brief Introduction of Department:

The department of Botany in Kalindi College came into existence in 1967 with the introduction of Life Science course in Bachelor of Science (General) stream. A new course B.Sc. Applied Sciences (Environmental Science) was introduced in 1985 to know more about the environmental issues. In order to broaden the horizon of understanding about Plant Sciences, the college started B.Sc. (Honours) course in Botany in 2013 under FYUP. However, the University reverted back to B.Sc. (Programme) semester mode in 2014. B.Sc. (Honours) Botany was introduced in the year 2017.

As Botany deals with the study of different processes going on in plants, the course in Botany encourages students to keep abreast of as many developments as possible in Plant Sciences. Studies in Classical Botany deal with plant behavior, morphology, physiology, embryology, ecology, genetics, systematic etc. and provide solutions to agricultural, horticultural and environmental problems, for crop improvement, organic farming and natural resource management. By the study of the fundamental details of plants, students can understand growth and development, reproduction, life cycle, medicinal values and economic importance of food resources. This course being an important component of Life Sciences offers immense opportunities in other related fields and applied disciplines such as Biochemistry, Biotechnology, Cell and Molecular Biology, Bioinformatics, Genomics, Agro-forestry, Environmental Science and Management and many others. Recent advances in Botany, which deal with the study of different processes going on in biological systems at the molecular level, have brought miraculous and revolutionary changes in the world of sciences. One of the most popular and much-needed areas of study is the climatic changes. The knowledge of plant science can be used to solve environmental challenges. While studying Botany the students learn all these aspects of plants including its applications. Besides, the students will have greater opportunities open to them in higher studies and research along with better job prospects.

## 2. Scope of the Subject:

Botany is emerging as one of the potential areas for career and research within the country and abroad. Aspirants having B.Sc. degree in Botany can find a lot of career opportunities in both public sector and private sector. They can join Botanical Survey of India (BSI), National Institute of Oceanography (NIO), Indian Agricultural Research Institute (IARI), Indian Council of Forestry Research and Education (ICFRE) etc. as a Research Associate. Graduates of this subject can opt for post-graduation in Life-Science, Biotechnology, Biochemistry, Toxicology, Genetics, Molecular Biology, Microbiology, etc. Applied Post-Graduate courses in Environmental Sciences, Agro Forestry, and Forensic Science can also be pursued.

Botany graduates are qualified for a variety of careers both in biological fields and also in areas where scientific knowledge is required. These include research in Universities and Government Research Institutions; consultancy in the private sectors, Environmental Protection agencies like National Parks, Reserves, Sanctuaries etc.; Plant Taxonomists in Herbariums and Ethnobotanists in food and pharmaceutical industries. Botany graduates can also find work in the education sector, with museums or other cultural organizations, or move into other jobs such as management, marketing, sales of scientific journalism.

After a degree in Botany, the students can pursue careers at various renowned National and International Institutions such as Jawaharlal Nehru Centre for Advanced Scientific Research, Indian Institute of Sciences, University of Delhi, Jawaharlal Nehru University, Indian Institute of Agricultural Research, World Wildlife Fund, National Institute of Immunology, Tata Energy Research Institute and so on for summer training programmes and internships. One can be a part of any reputed organization as a Plant Explorer, Conservationist, Ecologist, Environment Consultant, Horticulturist, Plant Biochemist, Nursery Manager, Genetics, Molecular Biologist, Taxonomist, Plant Pathologist, Environmental Consultant and Farming Consultant. Moreover, the application of plant sciences improves the yield and supply of medicines, foods, fibers, building materials and other plant products. The knowledge of plant sciences is essential for the development and management of forests, parks, waste lands, sea wealth, etc. Some of the industries which one can work with are:

- Chemical Industry
- Food Companies
- Arboretum
- Forest Services
- Biotechnology Firms
- Oil Industry
- Land Management Agencies
- Seed and Nursery Companies
- Plant Health Inspection Services
- National Parks and Sanctuaries
- Biodiversity Board
- Biological Supply Houses
- Plant Resources Laboratory
- Educational Institutions

### 3. Detail of the Faculty members:

S N	Name	Designation	Qualification	Area of Specialization
1	Dr. Kalpana Kumari	Assistant Professor	Ph.D	Ecology and Environmental Management
2	Dr. Divya Verma	Assistant Professor	Ph.D	Aerobiology and Bioinformatics
3	Dr. Sudesh Bhardwaj (Teacher In charge)	Assistant Professor	Ph.D	Reproductive Biology of Angiosperms
4	Dr. Ranjana Roy Mishra	Assistant Professor	Ph.D	Plant Biotechnology and Plant Genetics

5	Dr. M. Arunjit Singh	Assistant Professor	Ph.D	Marine Ecology, Conservation, Applied Phycology, Seaweed Diversity
6	Dr. Sanavar Soham (in lien)	Assistant Professor	Ph.D	Bryology, Archegoniates, Aquatic Angiosperms, Ecology and Environmental Management

#### 4. Detail of Laboratory Staff

SN	Name	Designation
1	Mr. Prabhakar Mishra	Laboratory Attendant
2	Mr. Gaurav Bharty	Laboratory Attendant

#### 5. Medium of Instruction: English

#### 6. Course Detail of Honours Course

##### 1<sup>st</sup> Year

Semester	Core	Generic Elective	AECC
I	CC-I: Microbiology and Phycology	GE-I: Biodiversity (Microbes, Algae, Fungi, and Archegoniatae)	Environmental Studies
	CC-II: Biomolecules and Cell Biology		
II	CC-III: Mycology and Phytopathology	GE-II: Plant Anatomy and Embryology	English
	CC- IV: Archegoniate		

##### 2<sup>nd</sup> Year

Semester	Core	Generic Elective	SEC
III	CC-IV: Anatomy of Angiosperms	GE-III: Plant Ecology and Taxonomy	SEC 1 Intellectual Property Rights
	CC-V: Economic Botany		
	CC-VI: Genetics		
IV	CC-VII: Molecular Biology	GE-IV: Plant Physiology and Metabolism	SEC 2 Medicinal Botany
	CC-VIII: Plant Systematics		
	CC-IX: Ecology		

3<sup>rd</sup> Year

Semester	Core	Discipline Specific Elective (DSE)
V	CC-XI: Reproductive Biology of Angiosperms	DSE-I: Analytical Techniques in Plant Sciences
	CCXII: Plant Physiology	DSE-II: Biostatistics
VI	CC-XIII: Plant Metabolism	DSE-III: Industrial and Environmental Microbiology
	CC-XIV: Plant Biotechnology	DSE-IV: Bioinformatics

## 7. Infrastructure:

- A big spacious Laboratory
- Preparatory Room
- Museum cum Laboratory
- Botanical and Herbal Garden
- Terrace Garden

## 8. University Rank Holder &amp; No. of 'O' Grade and 'A+' grade Achievers:

Number of students with 'O' Grade: 8

Number of students with 'A+' Grade: 35

## 9. Research in Department:

SN	Principle Investigator / (Co-investigator)	Title of the Project	Funding Agency, Duration & date of sanction	Amount (in INR)	Status of Project (Submitted/Ongoing)
1	Dr. Sudesh Bhardwaj	Pollen biology of trees in Kalindi College	College, one year, September 2018	Rs 12,500	Ongoing
2	Dr. Divya Verma	Green Synthesis of Gold Nanoparticles from Leaf Extract of <i>Rhoeo discolor</i> and Study of Its Antimicrobial Properties	College, one year, September 2018	Rs 12,500	Ongoing
3	Dr. Divya Verma	Quality assessment of drinking water at inlet and outlet of RO system in the Kalindi College	College, one year, September 2017	Rs. 25,000	Completed

**10. Highlights of Department Society Activity:****The Botanical Society:** *Amaranth*s**Convener:** Dr. (Ms.) Sudesh Bhardwaj**Office Bearers**

Post	Name
President	Saniya Sharma, B.Sc.(H)Botany
Vice President	PramadaSharan, B.Sc.(H)Botany
General Secretary	MeghnaVerma, B.Sc.(H)Botany
Joint Secretary	Richa Sharma, B.Sc.(H)Botany
Publicity Head	Deeksha Prakash Singh, B.Sc.(H)Botany
Publicity Head	PoshitaSachdeva, B.Sc.(H) Botany
Cultural Head	Sapna, B.Sc.(H)Botany
Cultural head	Mansi, B.Sc.(H)Botany
Treasurer	ShivaniUpadhyay, B.Sc.(H)Botany
Sponsorship head	Divyakaushik, B.Sc.(H)Botany
Proctor	Deepti and Garima, B.Sc.(H)Botany
Class Rep. III year	Sakshi, B.Sc.(H) Botany
Class Rep. II Year	Yakshina Sharma, B.Sc.(H) Botany
Executive members	Zainab, Muskan Gandhi, ChhaviRathi, Kajal and Komal from B.Sc.(H) Botany

**Other departmental activities:**

The Botanical society '*Amaranth*s' organized its annual function '*Aster*' on 27 September 2019. The function was inaugurated with the lighting of lamp by the Principal, Dr. (Ms.) Anjula Bansal and our esteemed guests Dr. Eklavya Chauhan (Retired Reader from Deshbandhu College, University of Delhi). Dr. Eklavya Chauhan delivered inaugural lecture on diverse aspects of Photosynthesis. Department of Botany also organized an inaugural function of Biochemical Society of Kalindi College on 30 September, 2019. An inaugural lecture by Dr. Sashi Tyagi (Ex-Principal, Gargi College, University of Delhi) on "How to write an effective CV?" and a quick hands on practice on experimental techniques used for estimation of enzymes activities based upon undergraduate curriculum plan was held. Both lectures were highly beneficial to the students.

Department of Botany of Kalindi College launched issue 1 of volume 2, of its biannual newsletter, "*The Amaranth Times*" on the auspicious occasion of '*Aster*: Annual fest for the year 2019' on 27th September, with the theme '*Plants –The Fundamentals of Life*' and tagline saying "Flora the beauty of nature". The newsletter included seven articles and three paintings from students of the department along with achievers list and an innovative column of 'Botanical Fun'. The inaugural function was followed by various competitions like Master Quiz, Botanical Rangoli, Paper Presentation, Extempore, Slogan Writing and Pot Painting. Furthermore, several other activities were held from time to time. A power-point competition was held on topic 'Pollen Biology' and winning teams were awarded certificates. Every Wednesday, a quiz competition was organized by different teachers of the 2020-2021

department to encourage student learning about particular subject areas. Winning teams were awarded certificates. Invited lecture by Dr. P. Chitralkha (Associate Professor, Dyal Singh College, University of Delhi) on Plant tissue culture techniques was also held. At the end, the convener thanked the Principal, guests, teaching and non-teaching staff for organizing the function successfully. The function was made possible only due to the teamwork of all office bearers, teachers and non-teaching staff.

### Educational Trip to Dehradun- Mussoorie, Uttarakhand

As a part of B.Sc. curriculum, a field trip to Dehradun-Mussoorie was organized by the Department of Botany, Kalindi College of University of Delhi for the students of BSc (H) Botany III year during October 19-21, 2019. The major objective was to familiarize the students with the flora and ecology of the region. Also to acquaint them with the importance of vegetation and the threats these ecosystems face due to natural and anthropogenic pressures. Students were accompanied by teachers and non-teaching staff members. Students collected bryophytes such as *Marchantia* (both vegetative thalli with and without gemma cups), *Funaria* (vegetative and sporophytic thalli bearing young and mature capsules) and sporophylls of pteridophytes such as *Dryopteris* and *Pteris* bearing sori. Students also visited Forest Research Institute (FRI), Dehradun, Uttarakhand on 20th October, 2019.

### Visit to Indira Paryavaran Bhawan

First year students of B.Sc. (H) Botany and Zoology visited the Indira Paryavaran Bhawan (IPB) along with two faculty members and a laboratory Assistant on 30 August 2018. IPB is a benchmark in sustainable built habitat and focuses on the Refuse, Reduce, Reuse and Recycle methods of sustainable development works under the Ministry of Environment, Forest and Climate Change. In a nutshell, students understood the concept of green building and learnt how we must use our natural resources and reduce our carbon footprints.

### 10. Scholarships and Prizes:

SN	Name of the Scholarship	Awarded for
1	Shrimati Prakashwati Nanchahal Scholarship	Highest marks in Botany paper of B.Sc. Life Science in Part-II exam
2	Shrimati Leela Sehgal Scholarship	Highest marks in Botany paper of B.Sc. Life Science in Part-I exam
3	Kanta Sachhar Prize	Highest marks in Paper Plant Physiology and Metabolism (UPC-42164401)
4	Kanta Sachar Prize	Highest marks in Paper Cell and Molecular Biology (UPC-42167902)
5	Kanta Sachar Prize	Highest marks in Paper Biomolecules and Cell Biology (Botany Hons.)
6	Dr. Sunanda Das Gupta Prize	Highest marks in Paper Plant Ecology and Taxonomy (42161201)
7	Dr. Sunanda Das Gupta Prize	Highest marks in Paper Biodiversity (42161101)
8	SudarshanSood Memorial Prize	Highest marks in Botany paper Economic Botany and Biotechnology (42167901)



SN	Name of the Scholarship	Awarded for
9	Dr. Vani Hardev Prize	Highest marks in Paper Microbiology and Phycology (32161101)
10	Dr. Hardev Singh Memorial Prize	Highest marks in Botany Part I, II & III Combined
11	Atmaram Nanchahal Memorial Prize	Best All Round student in B.Sc. Life Sciences Sem III and IV
12	Ved Prakash Bhagat Prize	Highest marks in Paper Mycology and Phytopathology (32161201)
13	Smt Sushila Devi Prize	Highest marks in Paper Archgoniatae (32161202)
14	Aditya Award	Highest marks in Botany (Hons)
15	P.K. Kapoor Prize	Highest marks in Paper Plant Anatomy and Embryology (42164301)
16	K. M. Sehgal Memorial Prize	Best all round student in Botany in B. Sc. (H) Botany
17	S.L. Sharma Memorial Prize	2 <sup>nd</sup> year Student who secured highest marks in Botany in 1 <sup>st</sup> year examination
18	S.L. Sharma Memorial Prize	2 <sup>nd</sup> year Student who secured second highest marks in Botany in 1 <sup>st</sup> year examination
19	Somnath Memorial Prize	1 <sup>st</sup> prize for standing 1 <sup>st</sup> in Botany at the aggregate of part I and II exam
20	Somnath Memorial Prize	2 <sup>nd</sup> prize for standing 2 <sup>nd</sup> in Botany at the aggregate of part I and II exam
21	Botany Teachers Prize	Highest marks in Botany Part II examination

### 11. Distinguished Alumni:

SN	Name	Institute
1	Megha	Food Corporation of India
2	Priya	Botanical Survey of India

12. Images











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