



Kalindi College

(NAAC Accredited 'A' Grade)

University Of Delhi



DEPARTMENT OF LIFE SCIENCE

ACADEMIC SESSION

2020-21



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1. Brief Introduction of Department:

- Year of establishment: 1967
- This course comprises three disciplines namely Botany, Chemistry and Zoology.

Relevance of the subject/course:

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.

Chemistry is an incredibly fascinating field of study which helps us to understand our world and make life easier. This field is essential for meeting our daily needs of food, clothing, shelter, health, energy, clean air, water, soil etc. Chemical technologies improve our quality of life in numerous ways. Furthermore, it is the central science as it connects biology, physics, geology, environmental science. Chemistry is the study of matter and changes it can undergo.

Zoology is the study of animals wherein the student receives a highly comprehensive exposure to all levels of animal function and their diversity. As a subject it creates enormous interest in us as we are also part of the animal kingdom. Thus, understanding the development and evolution of animals helps us to explore ourselves better. In this stream, students delve at a deeper level about how animals are an integral component of the ecosystem. Animals also have a major impact on our economy either as pests competing for our food or as parasites influencing the quality of public health.

2. Scope of the Subject:

- Life Sciences is a broad subject in Biological stream and is emerging as one of the potential areas for career and research within the country and abroad. Aspirants having B.Sc. degree in Life Sciences can find a lot of career opportunities in both public sector and private sector.
- The Chemistry portion of the course helps the students in improving their diverse skills in various areas such as laboratory skills, numerical and computing skills, ability to approach to the problems both analytically and logically, time management skills, etc.
- The importance of chemistry would not diminish over time, so it will remain a promising career path. In a nutshell, the study of chemistry provides a vehicle for obtaining an education for life in a broad sense, so welcome to the great world of chemistry.
- Master of Science Degree: Botany, Zoology, Biochemistry, Biotechnology, Microbiology, Genetics, Wildlife and various fields of Conservatory Sciences, Health

Sciences, Life-Science, Genetics, Molecular Biology, Forensic Science, Microbiology, etc. and Applied Post-Graduate courses in Environmental Sciences, and Agro Forestry can also be pursued.

- Research Training and Ph.D.- Can pursue research training and Ph.D. at renowned National and International Institutions.
- Post-Doctoral Fellowships- a large number of students also go in for research as Post-Doctoral Fellows in various Universities and Institutes all over the world.
- Assistant Professorships- in various Colleges or University Departments after completion of Ph. D.
- Teachers- after completing Masters one can pursue Bachelor Degree in Education (B.Ed).
- Scientists- various funding agencies especially UGC, DST and DBT offers a number of Women's Scientist positions, particularly aimed at motivating more women to take up research positions.
- Indian Administrative and Indian Forest services-a graduate student may seek their career in Indian Administration Services as a Civil Servant and Forest Officer after qualifying civil service examination.
- Jobs/ Services: Life Science is also in demand in agriculture, fisheries and other industries related to animal husbandry. They can also opt for areas like veterinary sciences, pharmaceuticals, technical and/ or research assistance in laboratories, museums, scientific organizations and scientific journalism. They also have other non-science options open to them like pursuing management, marketing and sales etc.
- They can also 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.

3. Detail of the Faculty members:

a. Department of Botany

S. No	Name	Designation	Qualification	Area of Specialization
1	Dr. Kalpana Kumari	Assistant Professor	M.Sc. (Ranchi University), M.Phil., Ph.D. (Vikram University), MP	Ecology and Environmental Management
2	Dr. Divya Verma	Assistant Professor	M.Sc. (Maharshi Dayanand Saraswati University) Ajmer M.Sc. (Bioinformatics), University of Edinburgh, Ph.D. (Maharshi Dayanand Saraswati University)	Aerobiology and Bioinformatics
3	Dr. Sudesh Bhardwaj (Teacher In charge)	Assistant Professor	M.Sc. (Maharshi Dayanand Saraswati University) Ajmer M.Sc. (Bioinformatics),	Reproductive Biology of Angiosperms

			University of Edinburgh, Ph.D. (MaharshiDayanand Saraswati University)	
4	Dr. Ranjana Roy Mishra	Assistant Professor	M.Sc., Ph.D. (University of Delhi) CSIR-UGC (J.R.F.) NET	Plant Biotechnology and Plant Genetics
5	Dr. M. Arunjit Singh	Assistant Professor	M.Sc, M.Phil. Ph.D (University of Delhi) CSIR-UGC NET	Marine Ecology, Conservation, Applied Phycology, Seaweed Diversity
6	Dr. Sanavar Soham (in lien)	Assistant Professor	M.Sc., M.Phil. Ph.D (University of Delhi)	Bryology, Archeoniates, Aquatic Angiosperms, Ecology and Environmental Management

b. Department of Chemistry

S. No	Name	Designation	Qualification	Area of Specialization
1	Dr. Aprajita Gaur	Associate Professor	M.Sc., M.Phil., Ph.D.	Inorganic Chemistry
2	Dr. Renu Bala	Associate Professor	M.Sc., M.Phil., Ph.D.	Organic Chemistry
3	Dr. Shilpika Bali Mehta (Teacher In charge)	Assistant Professor	M.Sc., Ph.D.	Organic Chemistry

c. Department of Zoology

S. No	Name	Designation	Qualification	Area of Specialization
1	Dr. Prem Prakash Saini	Assistant Professor	Ph.D.	Radiation Biology
2	Dr. Manisha Arora Pandit	Assistant Professor	Ph.D.	Neuro-Endocrinology
3	Dr. Tarkeshwar (In Lien)	Assistant Professor	M.Phil., Ph.D.	Applied Entomology
4	Dr. Kanchan Batra (Teacher In charge)	Assistant Professor	Ph.D.	Reproductive Biology
5	Dr. Shanuja Beri	Assistant Professor	Ph.D., PDF	Neuro-Biochemistry
6	Dr. Varsha Singh	Assistant Professor	Ph.D., PDF	Reproductive Endocrinology

7	Dr. K. Vandana Rani	Assistant Professor	M.Phil., Ph.D.	Fish Endocrinology
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4. Detail of Laboratory Staff

a. Department of Botany

S.No	Name	Designation
1	Mr. Prabhakar Mishra	Laboratory Attendant
2	Mr. Gaurav Bharty	Laboratory Attendant

b. Department of Chemistry

S.No	Name	Designation
1	Mr. Ashok Kumar	Laboratory Attendant
2	Mr. Yaspal	Laboratory Attendant
3	Mr. Bhuvan Chandra	Laboratory Attendant
4	Ms. Prakash Das	Laboratory Attendant
5	Mr. Nitin Kumar	Laboratory Attendant

c. Department of Zoology

S.No	Name	Designation
1	Ms. Sushma	Laboratory Attendant
2	Mr. Sunil Kumar	Laboratory Attendant

5. Medium of Instruction: English

6. Course Detail: B. Sc. Life Science under CBCS

1st Year

Semester	Core	AECC
I	1. Botany I: Biodiversity (Microbes, Algae, Fungi and Archeogoniate) Botany I: Practical 2. Zoology I: Animal Diversity Zoology I: Practical 3. Chemistry I: Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons Chemistry I: Practical	Environmental Science
II	4. CC-Botany II: Plant Ecology and Taxonomy CC-Botany II: Practical 5. CC- Zoology II: Comparative Anatomy and Developmental Biology of Vertebrates	English

	CC- Zoology II: Practical 6. CC-Chemistry II: Chemical Energetics, Equilibria & Functional Group Organic Chemistry-I CC-Chemistry II: Practical	
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2nd Year

Semester	Core	SEC
III	7. CC- Botany III: Plant Anatomy and Embryology CC- Botany III: Practical 8. CC- Zoology III: Physiology and Biochemistry CC- Zoology II: Practical 9. CC- Chemistry III: Conductance, Electrochemistry & Functional Group Organic Chemistry-II CC- Chemistry III: Practical	SEC 1 Botany/Chemistry/Zoology (Paper from any one of the department)
IV	10. CC-Botany IV: Plant Physiology and Metabolism CC-Botany IV: Practical 11. CC-Zoology IV: Genetics and Evolutionary Biology CC-Zoology IV: Practical 12. CC-Chemistry IV: Chemistry of s- and p-block elements, States of matter and Chemical Kinetics CC-Chemistry IV: Practical	SEC 2 Botany/Chemistry/Zoology (Paper from any one of the department)

3rd Year

Semester	Discipline Specific Elective (DSE)	SEC
V	DSE-Botany I Theory DSE-Botany I Practical	SEC 3 Botany/Chemistry/Zoology (Paper from any one of the department)
	DSE-Zoology I Theory DSE-Zoology I Practical	
	DSE-Chemistry I Theory DSE-Chemistry I Practical	
VI	DSE-Botany II Theory DSE-Botany II Practical	SEC 4 Botany/Chemistry/Zoology (Paper from any one of the department)
	DSE-Zoology II Theory DSE-Zoology II Practical	
	DSE-Chemistry II Theory DSE-Chemistry II Practical	

List of Skill enhancement courses (SEC-I to SEC-IV) (Any four)

Options for Botany	Options for Zoology	Options for Chemistry
<input type="checkbox"/> Biofertilizers <input type="checkbox"/> Medicinal Botany <input type="checkbox"/> Ethnobotany	<input type="checkbox"/> Apiculture <input type="checkbox"/> Medical Diagnostics	<input type="checkbox"/> IT Skills for Chemists <input type="checkbox"/> Basic Analytical Chemistry <input type="checkbox"/> Chemical Technology & Society

<input type="checkbox"/> Intellectual Property Right	<input type="checkbox"/> Research methodology <input type="checkbox"/> Sericulture <input type="checkbox"/> Aquarium Fish Keeping	<input type="checkbox"/> Chemoinformatics <input type="checkbox"/> Business Skills for Chemists <input type="checkbox"/> Intellectual Property Rights <input type="checkbox"/> Analytical Clinical Biochemistry <input type="checkbox"/> Green Methods in Chemistry <input type="checkbox"/> Pharmaceutical Chemistry <input type="checkbox"/> Chemistry of Cosmetics & Perfumes <input type="checkbox"/> Pesticide Chemistry <input type="checkbox"/> Fuel Chemistry
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List of Discipline Specific Electives (DSE-I & DSE-II) for Semester V and VI

Options for Botany (any two)	Options for Zoology (any two)	Options for Chemistry (any two)
<input type="checkbox"/> Economic Botany and Biotechnology <input type="checkbox"/> Cell and Molecular Biology <input type="checkbox"/> Analytical Techniques in Plant Sciences <input type="checkbox"/> Bioinformatics	<input type="checkbox"/> Applied Zoology <input type="checkbox"/> Animal Biotechnology <input type="checkbox"/> Reproductive Biology <input type="checkbox"/> Aquatic Biology <input type="checkbox"/> Immunology <input type="checkbox"/> Insect, Vector and disease	<input type="checkbox"/> Applications of Computers in Chemistry <input type="checkbox"/> Analytical Methods in Chemistry <input type="checkbox"/> Molecular Modelling & Drug Design <input type="checkbox"/> Novel Inorganic Solids <input type="checkbox"/> Polymer Chemistry <input type="checkbox"/> Research Methodology for Chemistry <input type="checkbox"/> Green Chemistry <input type="checkbox"/> Industrial Chemicals & Environment <input type="checkbox"/> Inorganic Materials of Industrial Importance <input type="checkbox"/> Instrumental Methods of Analysis <input type="checkbox"/> Chemistry of d-block elements, Quantum Chemistry and Spectroscopy <input type="checkbox"/> Organometallics, Bioinorganic chemistry, Polynuclear hydrocarbons and UV, IR Spectroscopy <input type="checkbox"/> Molecules of Life <input type="checkbox"/> Dissertation

7. Scholarship and Prizes:

- Department of Chemistry

S. No	Name of Students	Name of the Prize	Awarded for
1	Priya	Chemistry Teachers Prize – Rs. 150/	Highest marks in Chemistry in B. Sc LS Sem I & II
2	Priyal Taneja	Chemistry Teachers Prize – Rs. 150/	Highest marks in Chemistry in B. Sc LS Sem I & II
3	Sheetal Singh	Chemistry Teachers Prize – Rs. 150/	Highest marks in Chemistry in B. Sc LS Sem I & II
4	Sonal Rathi	Vishwa Nath Mangal Memorial Prize- Rs. 150/-	Highest marks in in B. Sc. Life Science all semester combined

5	Kanika Aggarwal	Chemistry Teachers Prize – Rs. 300/	Highest marks in Chemistry in B. Sc LS Sem III and IV
6	Shweta Mishra	Chemistry Teachers Prize – Rs. 300/	Highest marks in Chemistry in B. Sc LS Sem III and IV
7	MeetuRathi	P. K. Kapoor Prize –Rs. 100/-	Standing second in Chemistry in B. Sc LS Sem I, II,III and IV combined
8	Riya Arora	Academic Prize	First B.Sc Life Science I Year
9	Sheetal Singh	Academic Prize	Second B.Sc Life Science I Year
10	Prachi Garg	Academic Prize	First B.Sc Life Science II Year
11	Meetu Rathi	Academic Prize	Second B.Sc Life Science II Year
12	Sonal Rathi	Academic Prize	First B.Sc Life Science III Year
13	Urja Biswas	Academic Prize	Second B.Sc Life Science III Year

- Department of Zoology

S. No	Name of Students	Name of the Prize	Awarded for
1	Riya Arora	Canara Bank Prize – Rs. 150/	First Rank in Sem-I and Sem- II with Highest SGPA & CGPA & A+ Grade in Zoology Papers
2	Nupur	Canara Bank Prize – Rs. 150/	First Rank in Sem-V and Sem- VI with Highest SGPA & CGPA & A+ Grade in Zoology Papers
3	Meetu Rathi	Zoology Teachers Prize – Rs. 300/	First Rank in Sem-III and Sem- IV with Highest SGPA & CGPA & A+ Grade in Zoology Papers
4	Saumyata Pathak	Zoology Teachers Prize – Rs. 300/	Second Rank in Sem-III and Sem- IV with Highest SGPA & CGPA & A+ Grade in Zoology Papers
5	MeetuRathi	P. K. Kapoor Prize –Rs. 100/-	Standing second in Chemistry in B. Sc LS Sem I, II,III and IV combined
6	Riya Arora	Academic Prize	First Rank in I Year with Highest SGPA & CGPA & A+ Grade in Zoology Papers
7	Priya	Academic Prize	Second Rank in I Year with A+ Grade in Zoology Papers
8	Harshita	Academic Prize	Second Rank in Sem-II with A+ Grade in Zoology Paper
9	Meetu Rathi	Academic Prize	First Rank in II Year with Highest SGPA & CGPA & A+ Grade in Zoology Papers
10	Saumyata Pathak	Academic Prize	Second Rank in II Year with A+ Grade in Zoology Papers

11	Shraddha Gupta	Academic Prize	Second Rank in Sem-IV with A+ Grade in Zoology Paper
12	Nupur	Academic Prize	First Rank in III Year with Highest SGPA & CGPA & O & A+ Grades in Zoology Papers
13	Urja Biswas	Academic Prize	Second Rank in III Year with A+ Grade in Zoology Papers
14	Jyoti	Academic Prize	Second Rank in Sem-VI with A+ Grade in Zoology Paper

S. No	Name of the student	Name of the activity	Nature of award	Level of Award
1	Riya Arora, B.Sc. Life Sciences, 2ndyr	Collage Making, Kalindi College	Ist Prize	University
2	Smaranjot Kaur, B.Sc. Life Sciences, 2ndyr	Collage Making, Kalindi College	Ist Prize	University
3	Anjali, B.Sc(H) Chemistry, 2ndyr	Collage Making, Kalindi College	Consolation	University
4	Anubha, B.Sc(H) Chemistry, 2ndyr	Collage Making, Kalindi College	Consolation	University
5	Shraddha, B.Sc. Life Sciences, 3rdyr	Debate competition, Sri Venkateshwara College	Ist prize	University
6	Shraddha, B.Sc. Life Sciences, 3rdyr	Debate competition, Dept of Chemistry, Motilal Nehru College	IInd prize	University
7	Shraddha, B.Sc. Life Sciences, 3rdyr	Debate competition, Shaheed Rajguru College	Best Interjector	University
8	Shraddha, B.Sc. Life Sciences, 3rdyr	Declamation, udaanutsav, Indira Gandhi Institute	Consolation	State
9	Shraddha, B.Sc. Life Sciences, 3rdyr	Debate competition, Dept of B.A Prog, Motilal Nehru College	IInd prize	University
10	Kalpita, B.Sc. Life Sciences, 3rdyr	Oral presentation, National conference, Kalindi college	Ist Prize	National Conference
11	Kalpita, B.Sc. Life Sciences, 3rdyr	Paper presentation, Daulat ram college	-	International conference
12	Kalpita, B.Sc. Life Sciences, 3rdyr	Inter-College Techno-Management Presentation Contest	Best Paper Award	Prastuti-2019
13	Rhishika, B.Sc. Life Sciences, 3rdyr	Invitational Football Tournament, Kamla Nehru college	Player of the match	University
14	Harshita, B.Sc. Life Sciences, 3rdyr	Boxing Tournament, Dyal Singh college	IIIrd Prize	University



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8. University Rank Holder

B.Sc. Life Sciences:

Number of students with 'O' Grade: 10

Number of students with 'A+' Grade: 77

9. Research in Department

Projects in the Department of Botany:

S. No	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	Kalindi 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

Major Projects in the Department of Zoology:

I. DST-SERB ECR (2017-2020)

Project Investigator: Dr. Varsha Singh

Title of the Project: Functional interaction between vasotocin and corticosteroids in catfish *Heteropneustes fossilis*

Total fund of the project: Rs. 23,07,201/-

II. DBT Project Foldscope 2018-19

Project Investigator: Dr. K. Vandana Rani

Title of the Project: Evaluation of health improvement in Fish challenged with bacteria and fed on supplemented feed.

Total fund of the project: Rs. 8,00,000/-

Minor Projects in the Department of Zoology(In-house Projects):

S. No	Principle Investigator / (Co-investigator)	Title of the Project	In-house Project Code	Amount (in INR)	No of Undergraduate students involved in project
1	Dr. K. Vandana Rani, Dr. Shanuja Beri	The Living Green Wall of College – An Educational exposition of Bottle Vertical Garden System	26/2018	Rs 15,000	10
2	Dr. Varsha Singh, Dr. Manisha Arora Pandit, Dr. Tarkeshwar	Linking urban green spaces with potential carbon stock	27/2018	Rs.7,500	05
3	Dr. Varsha Singh & Dr. Manisha Arora Pandit & Dr. Tarkeshwar	Reinventing the Butterfly Conservatory	28/2018	Rs.7,500	15
4	Dr. Tarkeshwar, Dr. Amit Kumar, Dr. DivyaVerma, Dr. PunitaVerma	Ayurveda: The Alternative System of Time Tested Medicine	44/2018	Rs. 10,000	15
5	Dr. Tarkeshwar, Dr. PunitaVerma	Student Wellness: Strategy for Student Success through Medical Diagnostics	45/2018	Rs. 15,000	15

10. Highlights of Department Society Activity:

The Biochemical Society was formed for students of B.Sc. Life Sciences, which being an interdisciplinary course includes Botany, Chemistry and Zoology departments. The activities of the society are organized by rotation among the three departments. The purpose of this society is to create enthusiasm in the students and motivate them to perform in the scientific arena.

The Biochemical Society organized a Lecture cum Fest in 2018-19 in the college premises. Our invited guest for the talk, Dr. Sodhi delivered a lecture on ‘Role of Forensic Chemistry in Processing

Crime Scene Evidence'. Various academic events are also organized by Biochemical Society which includes Powerpoint Presentation, Poster Making, Quiz, Just A Minute, Guess the Substance, Dumb Charades, Face Painting and Fotografia related to science.

Exciting cash prizes and certificates are also given to the students for their performance.

11. Distinguished Alumni:

S.No	Name of the Alumina	Current Status/Position
1	Mrs. Vinny Sharma Shah, (B.Sc. Life Science, 2006-2009)	Assistant Professor, Forensic science, Galgotias University, since 2014, associated with ePGPatshala, Editor, Indian Botanist journal, Member Editorial Board, International journal of Forensic Science.
2	Pratibha, (B.Sc. Life Science, 2006-2009)	A guiding force for new students at the Tokyo Riverside Academy in the heart of culturally important temple town of Asakusa in Tokyo. In a recent life-event, Pratibha moved to the UK after spending a glorious 4 year stint at Japan. She's looking forward to exploring the historical city of London and traveling across the country.
3	Pankaj, (B.Sc. Life Science, 2006-2009)	Working in KVS Air Force Station Halwara Punjab
4	Jasmin Jaggarwal, (B.Sc. Life Science, 2011-2014)	PGT Zoology, Kendriya Vidyalaya CSIR-UGC JRF in Life Sciences, Rank 54 (All India)
5	Amarjeet Kaur, (B.Sc. Life Science, 2012-2015)	Pursuing Ph.D. from Wildlife Institute of India, Dehradun.

12. Some Glimpses







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