

**DBT Star College Scheme  
Annual Report [April 2024-May 2025]  
Hindu College  
(Department of Botany, Chemistry, Physics and Zoology)**

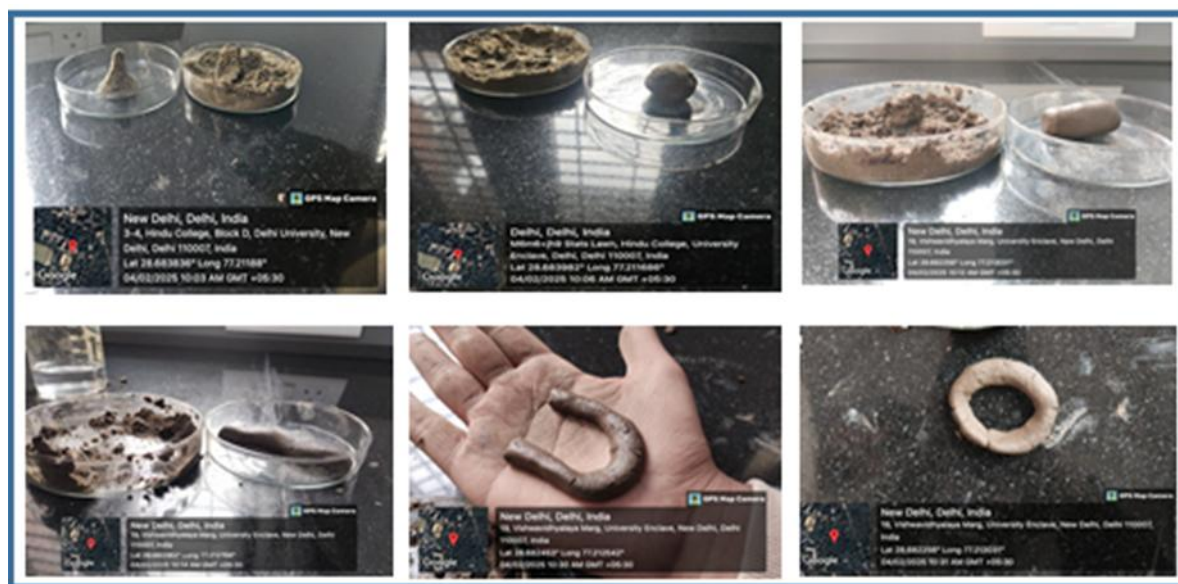
The DBT Star College Scheme aims to strengthen the academic and practical skills of undergraduate (UG) students by providing enhanced support for quality improvement in science education. This report highlights the various academic activities organized by the various science departments of Hindu College under this scheme during the period **April 2024-May 2025**, focusing on Extension Experiments in regular laboratory courses, Project Work, Value-Added/Add-On Courses, Invited Talks, Field/Lab Visits & Laboratory Staff Training.

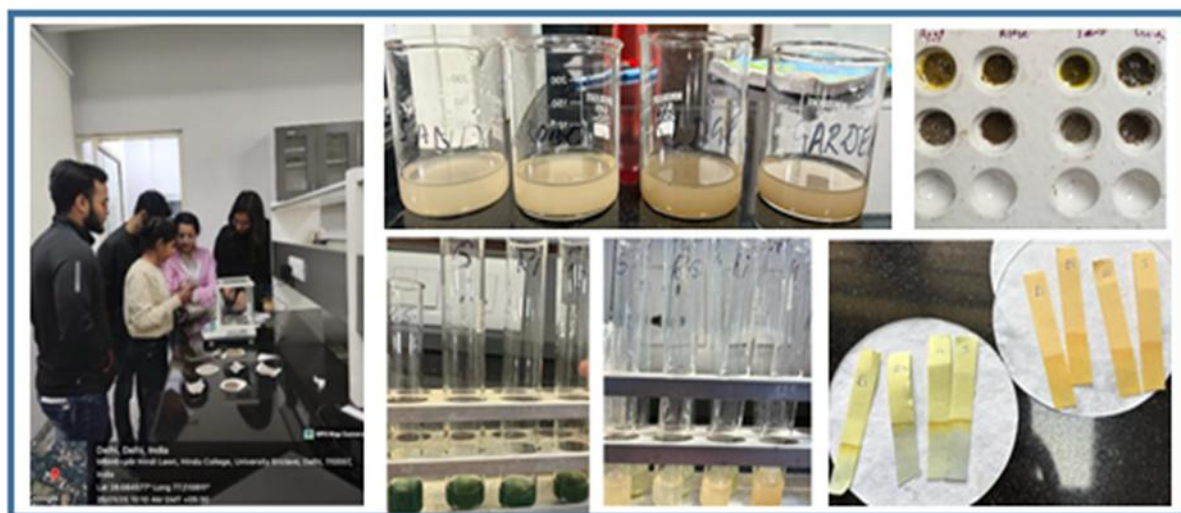
*Annexure I*

**EXTENSION EXPERIMENTS**

**Department of Botany**

S.No.	Title of the experiment	Number of beneficiaries students
1	Determination of Soil pH and other Rapid Field Tests in different Soil Samples	19
2	Analysis of Soil Texture of different soil samples	18
3	Study of plant diversity algae, bryophytes, pteridophytes, gymnosperms and angiosperms growing in college campus	16 (Interdisciplinary)
4	Isolation of cyanobacteria (Anabena) from the Azolla leaves	28
5	Study of plant disease in college campus	28

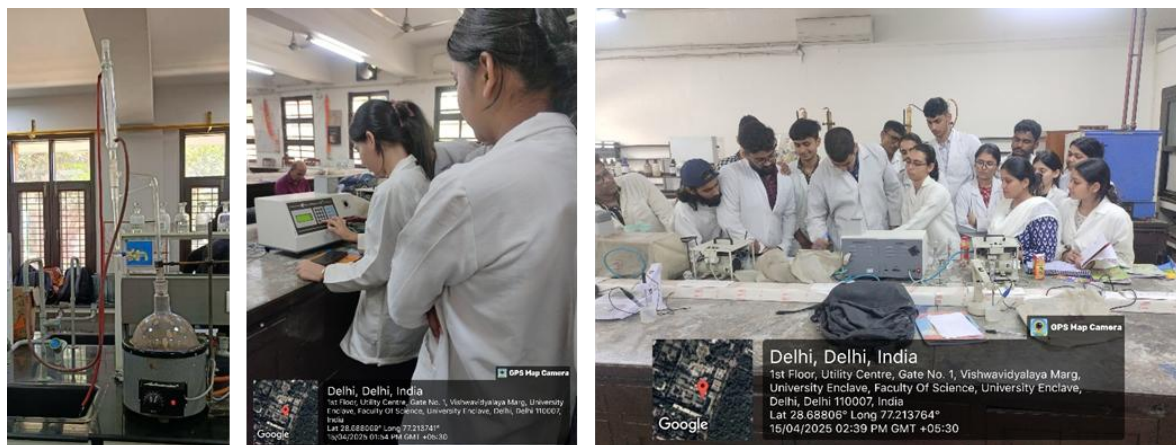




## Department of Chemistry

S. No.	Title of Experiments	Number of Beneficiaries
1.	Knoevenagel and Biginelli multicomponent reactions in green solvents	20
2.	TLC analysis of analgesic drugs.	20
3.	Aldol condensation via microwave/green method.	30
4.	Phase diagram of 3 components systems.	30
5.	Nitration by green method.	15
6.	Use of phenolphthalein indicator in trap cases.	25
7.	To study the oscillating chemical reactions of indigo carmine and Methylene blue.	18
8.	Preparation of simple polymers-Nylon.	37
9.	Estimation of micro-nutrients by flame photometer.	14
10.	Concentration of alkali and alkaline earth metals in milk, juice using flame photometer.	16
11.	To determine conc. of light absorbing species in a mixture- MLRA method.	23
12.	Extraction of essential oils from rose as rose water.	32 (Interdisciplinary)
13.	Determination of phosphate in water by quantitative analysis.	24
14.	Determination of fluoride in water by quantitative analysis.	24
15.	To determine molar mass by Victor- Meyer method.	25
16.	Phase diagram of incongruently melting system.	25
17.	To determine thermodynamic parameters from EMF vs T.	48

18.	To determine thermodynamic function of $\text{Cu}^{2+}$ and $\text{Zn}^{2+}$ potentiometrically.	25
19.	To study kinetics of hydrolysis of 3° aliphatic halide conductometrically.	27
20.	To study kinetics of nitroethane conductometrically.	25
21.	To determine molar mass by boiling point elevation/freezing point depression.	35



## Department of Physics

S.No	Title of Experiments	No. of Beneficiaries
1.	Generating fringes using Michelson interferometer.	60
2.	Generating and understanding the fringes using Fresnel biprism	50
3.	Studying Hadinger and Fizeau fringes	50
4.	Verifying different combinational gates using Zener diodes.	20
5.	To study and verify T-pi network equivalence.	20
6.	To study the electrical machine trainer and its different applications.	4
7.	To study the time evolution of a Gaussian Wave Packet by solving time dependent Schrodinger wave equation using Crank-Nicholson algorithm.	35
8.	Solve time independent Schrodinger wave equation for different types of anharmonic oscillator.	60
9.	To study the transformer trainer and its application to understand different aspects of the transformer used in power electronics.	4
10.	Estimate the radius of planet Earth through measurement of shadow length when the Sun is on the observer meridian.	6
11.	To study the output of full wave rectifier for center tapped and bridge configuration and to study the effect of capacitor of output power and ripple factor	45
12.	To solve simultaneous equation using operational amplifier	10

## Department of Zoology

S.No	Title of Experiments	No. of Beneficiaries
1.	Taxomorphic studies of non-chordates in the college campus	40
2.	Study of the Animal Behavior and Insect fauna	40
3.	To cytochemically demonstrate the presence of histones (basic proteins) in blood film of fish ( <i>Clarius batrachus</i> ) using Fast Green FCF (at pH 8.1).	40
4.	Study of phagocytic activity of head kidney and splenic macrophages in Indian Catfish, <i>Heteropneustes fossilis</i>	35
5.	Study and dissection of Imaginal Discs in the fruit fly, <i>Drosophila melanogaster</i>	40
	Squash Preparation of Polytene Chromosomes from <i>Drosophila</i> larvae	40
6.	Study of Developmental Stages of <i>Drosophila melanogaster</i>	45
7.	Study of Developmental Stages of Zebrafish ( <i>Danio rerio</i> ) till 5 dpf (days post fertilization) and Observation of Morphological Traits of Male and Female Zebrafish	15
8.	Analyzing the toxic effects of Endocrine disruptors in the <i>Euplotes crassus</i> model	20
9.	The Effect of Endocrine disruptors on the Life Cycle of <i>Drosophila melanogaster</i>	20

**INTERNSHIPS/PROJECTS****Department of Botany**

S. No.	Title of the experiment	Number of beneficiaries
1.	Synthesis of Green Nanoparticles using <i>Cinnamomum tamala</i> (Indian Bay Leaf) and evaluating its effect on <i>Triticum</i> seed germination	4
2.	Studying the Taxonomic Features of Mosses (Pogonatum) using Light and Scanning Electron Microscopy (SEM)	2
3.	Studying the Taxonomic Features of Mosses (Brachythecium) using Light and Scanning Electron Microscopy (SEM)	2
4.	Studying the Taxonomic Features of Mosses (Leucobryum) using Light and Scanning Electron Microscopy (SEM)	2
5.	Studying the Taxonomic Features of Mosses (Grimmia) using Light and Scanning Electron Microscopy (SEM)	2
6.	Studying the Taxonomic Features of Mosses (Thuidium) using Light and Scanning Electron Microscopy (SEM)	2
7.	Studying the Taxonomic Features of Mosses (Trachypodopsis) using Light and Scanning Electron Microscopy (SEM)	2
8.	Studying the Taxonomic Features of Mosses (Hedwigia) using Light and Scanning Electron Microscopy (SEM)	2

**Department of Chemistry**

S. No.	Titles of Projects/ Internships	Number of Beneficiaries
1.	Project on Utilization of Diatom Frustules for Drug Delivery	1
2.	Internship on Advanced Electrochemistry in Electrocatalytic Energy Conversion Applications.	6
3.	Project on Synthesis of Magnetite Silica Decorated Nanocatalysts for CO <sub>2</sub> Fixation. <b>ongoing</b>	2
4.	Internship on Scientific Writing for Publication of Research/Review Articles in Peer-Reviewed High Impact Journals. <b>ongoing</b>	5
5.	Project on Extraction of Microplastic Beads from Diverse Skin-Care Products using Greener Solvents and Analysis using Physico-chemical techniques. <b>ongoing</b>	6 <b>Interdisciplinary</b>
6.	Internship on Literature review and scientific writing on magnetic metal organic frameworks (MOFs). <b>ongoing</b>	5 <b>Interdisciplinary</b>
7.	Project on "Smart Protein". <b>ongoing</b>	3 <b>Interdisciplinary</b>
8.	Project on Realization of Real Time Monitoring of Water and Milk Adulteration using Non-Invasive Technique. <b>ongoing</b>	6 <b>Interdisciplinary</b>
9.	Project on "Development of Naofertilizers" <b>ongoing</b>	8 <b>Interdisciplinary</b>



## Department of Physics

S.No.	Project title	No. of Beneficiaries
1.	Fourier pseudo spectral analysis and forward-reverse modelling of soliton using KdV equation by applying data driven PINN	3
2.	Planck's constant determination using diodes interfaced with Arduino microcontroller and applying different regression techniques	4
3.	To generate Chladni pattern experimentally and computationally analysing different modes using Fourier spectral method	5
4.	To study stable orbits for three body problem	4
5.	Investigating Newton's law of cooling for fluids and granular solids: A regression-based model fitting approach	2
6.	Numerical refocusing to find object sensor distance using Fresnel diffraction	3
7.	Applied illuminations in 4f system and advantages in resolution	2
8.	To study the effect of salt stress in various vegetable	2
9.	To grow thin film of zinc oxide using chemical deposition method and to study its electrical properties	4
10.	To grow a p-n junction using thin film of zinc oxide and nickel oxide	4
11.	To deposit a metal thin film using thermal evaporation for various applications	4
12.	Studying the conductivity & optical properties of starch-salivary amylase reactions	4
13.	Numerical refocussing to find object-sensor distance in Fresnel Diffraction	3
14.	Spatial Filtering for enhancing your clicked image	2
15.	Synthesis & Applications of Multiferroic Materials	3

16.	<b>Project Work:</b> Non-Invasive Optical Diagnostics for Water Contamination Detection	6 <b>Interdisciplinary</b>
17.	<b>Project Work:</b> Non-Invasive Sensing of Milk Adulterants: A Safer, Smarter Approach	6 <b>Interdisciplinary</b>
18.	<b>Project Work:</b> Detection and degradation of Microplastics	6 <b>Interdisciplinary</b>
19.	<b>Project Work:</b> Fabrication of Ammonia Gas Sensor Based on Nanostructured Polyaniline and Polyaniline Hybrid Materials	13 <b>Interdisciplinary</b>
20.	<b>Project Work:</b> Investigations on Up-Conversion nanophosphors for next generation Solar Cells	6 <b>Interdisciplinary</b>
21.	<b>Internship:</b> BURAI for DFT Calculations: A General Study with Special Focus on Heusler Alloys	2
22.	<b>Internship:</b> Density Functional Theory Investigation of Heusler compounds $Li_2XAl$ ( $X=K, Ca, Sc, Ti, V, Cr, Mn, Fe$ )	1
23.	<b>Internship:</b> Investigation of Thermal Transport using Continuum Modelling and Molecular Dynamics Simulation.	3
24.	<b>Internship:</b> CFD DEM Study of Particle Laden Cavity Flow for Bi-Dispersed Particles	4



### Department of Zoology

S.No.	Project title	No. of Beneficiaries
1.	Investigation of the bioefficacy of the botanicals on the biological parameters of <i>Callosobruchus chinensis</i> (Coleoptera: Bruchidae)	2
3.	Analysing the toxic effects of Dimethyl Pthalate (DMP) which is an endocrine disruptor in <i>Drosophila</i> model.	2
4	Learning various Molecular Biology techniques	2
5	Maintenance of aquarium and ornamental fish culture	95 <b>Interdisciplinary</b>
6.	Analysis of water quality parameters of water samples collected from Yamuna (Wazirabad site).	9 <b>Interdisciplinary</b>

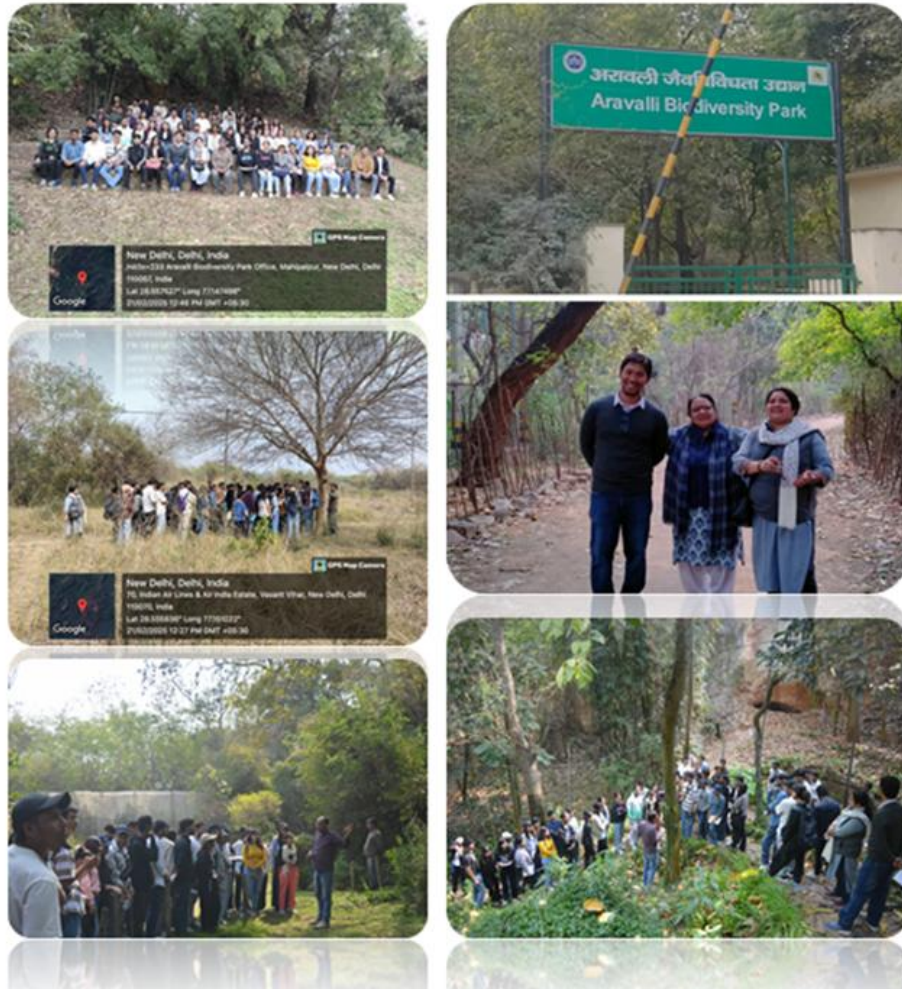


**INDUSTRIAL VISITS/ ACADEMIC/FIELD TRIPS****Department of Botany**

<b>S. No.</b>	<b>Title of the experiment</b>	<b>Number of beneficiaries/ students</b>
1.	Visit to Yakult Danone India Pvt. Ltd., Sonapat, Haryana (1 <sup>st</sup> April, 2024)	56
2.	Visit to, Aravalli Biodiversity Park, Vasant Kunj, New Delhi (21 <sup>st</sup> February 2025).	56
3.	Visit to ICAR–IARI, Regional Station, Katra in (Kullu Valley, Himachal Pradesh) on (3 <sup>rd</sup> March 2025).	29
4.	Visit to the Department of Botany, University of Delhi	28
5.	Visit to Dalhousie, Himachal Pradesh, from 19 <sup>th</sup> to 22 <sup>nd</sup> April, 2024.	29



**Field Visit to Yamuna Biodiversity Park, Delhi.**



**Glimpses of the visit to Aravalli Biodiversity Park, Vasnt Kunj, on 21<sup>st</sup> February, 2025.**



**Glimpses of the Education Trip to ICAR-IARI, Regional Station, Katrain (Kullu Valley, Himachal Pradesh), on 3<sup>rd</sup> March, 2025**



## Department of Chemistry

S. No.	Industrial/ Academic/ Field Visits	Number of Beneficiaries
1	IIT Delhi (21 <sup>st</sup> October 2024)	10
2	Glass Blowing Lab, IIT Delhi (22 <sup>nd</sup> January 2025)	22
3	Industrial Visit to Indian Institute of Packaging (IIP) (13 <sup>th</sup> February 2025)	25



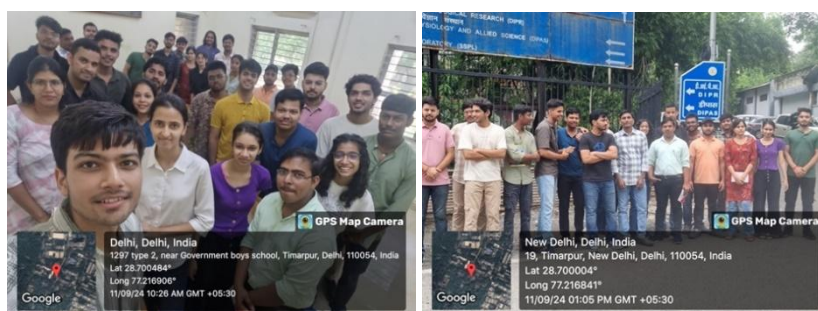
## Department of Physics

S.No.	Industrial visit/Field visit	No. of Beneficiaries
1.	Solid state physics laboratory (11 <sup>th</sup> September, 2024)	30
2.	Lzen Electronics India (12 <sup>th</sup> September, 2024)	30
3.	National Physical Laboratory, CSIR (1 <sup>st</sup> October, 2024))	125
4.	Jantar Mantar, New Delhi (21 <sup>st</sup> October, 2024)	75
5.	Inter University Accelerator Center (28 <sup>th</sup> February, 2025)	10

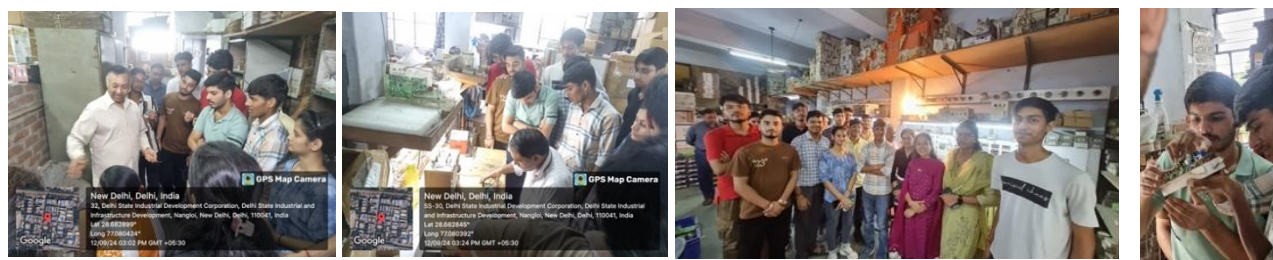
### Jantar Mantar Visit



### SSPL Visit



### Industrial Visit



## Department of Zoology

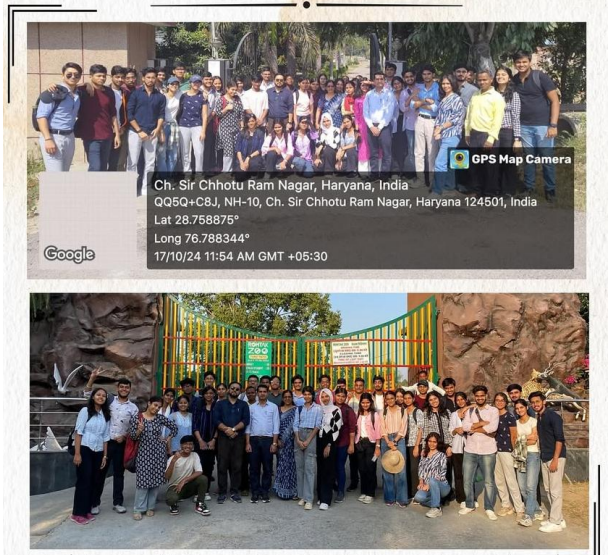
S.No	Industrial/ Academic/ Field Visits	No. of beneficiaries
1.	National Centre for Integrated Pest Management (ICAR-NCIPM), New Delhi. (22 <sup>nd</sup> Aug. 2024)	20
2.	Institute of Genomics and Integrative Biology (IGIB), Mall Road, New Delhi. (23 <sup>rd</sup> Aug. 2024)	35
3.	Central Institute of Fisheries Education (CIFE), and Tilyar lake, Rohtak, Haryana. (18 Oct. 2024)	40
4.	Electron Microscope (SEM/TEM) facility at AIIMS, New Delhi (21st Oct. 2024)	35
5.	Wildlife Institute of India (WII), Uttarakhand. (14 Nov. 2024)	50

6.	Forest Research Institute (FRI), Dehradun, Uttarakhand (15 Nov. 2024)	50
7.	Kamla Nehru Ridge, University of Delhi, Delhi (27 Feb., 2025)	40

**A Visit to AIIMS (All India Institute of Medical Sciences)**



**A visit to ICAR-Central Institute of Fisheries Education, Rohtak Centre, Haryana**



**A visit to Wildlife Institute of India (WII) and Forest Research Institute (FRI), Dehradun**

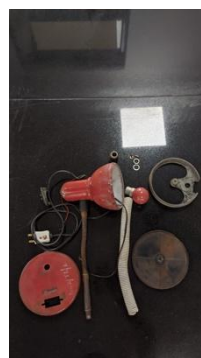


**CONFERENCES/SEMINARS/WORKSHOPS****Department of Chemistry**

S. No.	Title of the Activity / Technique	Number of Beneficiaries
1.	Workshop on “sustainable Chemistry for innovations in Clean Air, Energy and Water”. Speaker: Dr. Rishikesh Narayan, Associate Professor, IIT Goa Speaker: Prof. Dinesh Mohan, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi. Dated: 8 <sup>th</sup> November 2024	200
2.	Workshop on Sustainable Perfumery Speaker: Alain Garossi, Creative Design Master Perfumer from Grasse. Dated: 3 <sup>rd</sup> February 2025	40 <b>Interdisciplinary</b>

**Department of Physics**

S.No	Hand on training for students	No. of Beneficiaries
1.	Arduino training	10
2.	Electrical machine training	4
3.	Electrical Transformer training	4
4.	E-waste management training and skill	20
5.	Surface Plasmon Resonance	10

**Recycling E-Waste**

## Department of Zoology

S.No.	Hands-on training/ Workshop	Faculty Coordinator	No. of beneficiaries
1.	Workshop on Intellectual Property Rights (IPR) in collaboration with Lall & Sethi, New Delhi. (7 <sup>th</sup> Nov. 2024)	Dr Anupam V. Sharma	40



**INVITED TALKS****Department of Botany**

S. No.	Title of the experiment	Number of beneficiaries
1.	Invited talk on “Journey Including Ways to Find Funded PhD from Foreign Universities”, on 15 <sup>th</sup> January 2025, Speaker: Ms. Lamha Kumar shared her academic path and valuable insights on securing fully funded international PhD positions.	110
2.	Invited Talk on the topic “Evolution: the sine qua non of biology!” on 24 <sup>th</sup> February 2025 at Seminar Hall. Speaker: Dr. Eapsa Berry, Fellow-in-Residence, Ashoka Trust for Research in Ecology and the Environment (ATREE), Bengaluru.	105
3.	Invited Talk on the topic “Impact of Gut Microbiome on Human Health” on 7 <sup>th</sup> March 2025. Speaker: Dr. Asha Rani, Senior Research Scientist, University of Massachusetts, Amherst, USA,	120
4.	Talk on “Invasive species (Intruders in the Plant World)” on 10 <sup>th</sup> October 2024. Speaker: Dr. Gyan Prakash Sharma, Professor, Department of Environmental Studies, University of Delhi.	105

**Department of Chemistry**

S. No.	Details of Seminars/ Talks/ Visiting Faculty visits	Number of Beneficiaries
1.	Invited Talk (online) on Polymers: What, Why and Where Speaker: Prof. Seema Agarwal, University of Bayreuth, Germany. <b>Conducted by: Mr. Pawan P. U., DBT Ambassador</b>	80

	<b>Pursuing M.Sc. at University of Bayreuth, Germany.</b> Dated: 23 <sup>rd</sup> January 2025	
2.	Seminar on Organic Farming Speaker: Ms. Kavita Bagga, Director-Kara Organics Pvt. Ltd. PGDBM: Institute of Management Technology, Ghaziabad Dated: 8 <sup>th</sup> April 2025	200 <b>Interdisciplinary</b>
3.	Invited Talk on DOZN <sup>TM</sup> A Quantitative Green Chemistry Evaluator. Speaker: Dr. Ettigounder Ponnysamy, Director and Fellow of Green Chemistry at MilliporeSigma, USA Dated: 27 <sup>th</sup> February 2025	100 <b>Interdisciplinary</b>
4.	Invited Talk on “Green Chemistry-Inventing a Sustainable Future” by one of the Fathers of Green Chemistry. Speaker: Prof. John C. Warner President, CEO and CTO, Technology Greenhouse, Andover, MA, USA Dated: 7 <sup>th</sup> March 2025	70 <b>Interdisciplinary</b>
5.	Invited Talk on Role of Green Chemistry in Industry. Speaker: Dr. Rakeshwar Bandichhor Vice President & Head, Chemistry - API - Process R&D at Dr. Reddy's Laboratories, Vice-Chair, ACS-India Dated: 19 <sup>th</sup> March 2025	100 <b>Interdisciplinary</b>
6.	Invited Talk on Green Chemistry Principles by Father of Green Chemistry. Speaker: Prof. Paul Anastas Director-Yale University Centre for Green Chemistry and Green Engineering Dated: 1 <sup>st</sup> April 2025	170 <b>Interdisciplinary</b>
7.	Invited Talk on Sustainable Perfumery Speaker: Dr. Michael Zviely, Organic Chemist and Flavour & Fragrance Industry Expert. Dated: 3 <sup>rd</sup> March 2025	40 <b>Interdisciplinary</b>
8.	Invited Talk (online) on Knowledge, feeling and doing: Learning to be creative, compassionate and collaborative. Speaker: Prof. Anil K. Gupta Founder-Honey Bee Network SRISTI, GIAN, NIF, Visiting Faculty, IIMA, IITB. Dated: 4 <sup>th</sup> September 2024	250 <b>Interdisciplinary</b>

### Department of Physics

S.No	Detail of invited talk	No. of Beneficiaries
1.	Dr. Isha Yadav, Scientist-E, Solid State Physics Laboratory New Delhi; September 5, 2025	250
2.	Prof. S. Murugavel, Department of Physics and Astrophysics: University of Delhi, 17 <sup>th</sup> October 2024	250

3.	Dr. Anjali Sharma, ARSD College, University of Delhi; 18 <sup>th</sup> October 2024	250
4.	Dr. Shibu Saha, Scientist, National Physical laboratory, New Delhi; 18 <sup>th</sup> October 2024	250
5.	Prof Daksh Lohia, Department of Physics, University of Delhi; Getting inspiration from Stephan Hawking: 27 <sup>th</sup> February 2025	150
6.	Prof. Venu Gopal Achanta, Director, National Physical laboratory, New Delhi on “Quantum Metrology” on 2 <sup>nd</sup> April 2025	250
7.	Prof. Kedar Khare, Optics & Photonics Centre, IITD; Introduction to Computational Imaging, 4 <sup>th</sup> April 2025	70
8.	Dr. Awanish Pandey, IIT Delhi ; Silicon dreams; India’s rise in the global chip race on 21 <sup>st</sup> April 2025	120

### Isha Yadav Talk



### NPL Director Prof. Venu Gopal Achanta Talk



### Prof. Daksh Lohia Talk



## Department of Zoology

<b>S. No.</b>	<b>Speaker/ Resource person</b>	<b>The topic of Invited talk</b>	<b>No. of beneficiaries</b>
1.	Dr Prachi, Department of EVS, Hindu College, DU (20 <sup>th</sup> March, 2025)	Biochar-Based Innovations for Sustainable Water Treatment: Applications and Advances	85
2.	Dr Shafali Garg Assistant Professor Department of Zoology, Hansraj College, University of Delhi (21 <sup>st</sup> March, 2025)	Waste Water Sampling and Characterization	105
3.	Dr Isha Shukla, Consultant Neurologist, Park hospital, Gurugram (16 <sup>th</sup> April, 2025)	Neurophysiology-Current knowledge and Future directions	120
4.	Dr Nisha Singh, Assistant Professor, Department of Zoology, Daulat Ram College, University of Delhi (16 <sup>th</sup> April, 2025)	Sleep and mental health in contemporary generation	115
5.	Shalini Singh PhD student, Helmholtz-Zentrum Dresden-Rossendorf, Germany. (1 <sup>st</sup> February, 2025)	Webinar on AI and sustainability	95
6.	Vijay Kumar Saini, PhD Student, Department of Surface processes, Institute of Resource Ecology, Helmholtz-Zentrum Dresden-Rossendorf, Germany (1 <sup>st</sup> March, 2025)	Webinar on Exploring Raman Spectroscopy (on account of National Science Day)	90



**Invited Talk on ‘Neurophysiology-Current knowledge and Future directions’ by Dr Isha Shukla**



**Invited Talk on ‘Sleep and mental health in contemporary generation’ by Dr Nisha Singh**

**SUMMER/WINTER TRAINING/ADD-ON/ VALUE ADDED COURSES****Department of Botany**

S. No.	Summer/ winter Schools	Number of beneficiaries students
1.	Comparative study of Mushroom waste extract and distilled water on seed germination <i>ongoing</i>	11
2.	Effect of different algae on BOD in polluted water <i>ongoing</i>	6
3.	Comparative antioxidants production in vegan and non-vegan food <i>ongoing</i>	6

**Department of Chemistry**

S.No.	Summer/ winter Schools	Number of Beneficiaries/students (I <sup>st</sup> /II <sup>nd</sup> /III <sup>rd</sup> years) and their course			
		School students	I <sup>st</sup>	II <sup>nd</sup>	III <sup>rd</sup>
1	Winter training on “Introduction to basic synthetic methodologies for synthesizing novel inorganic compounds. Conducted by DBT Ambassador: Ms. Simran, M.Sc. DU			20	
2	Certificate course on Green Chemistry: Shaping our sustainable future. <i>Ongoing started from 27<sup>th</sup> February 2025</i>	50 Inter- disciplinary from different institutions			

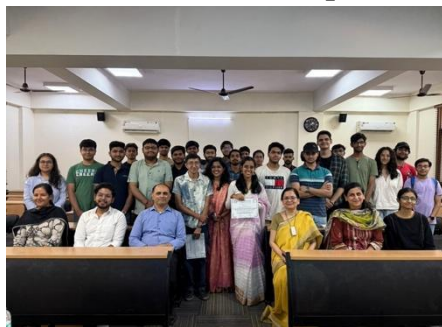
**Department of Physics**

S.No	Summer/Winter Training	No. of Beneficiaries
1.	Arduino Training from 29.07.2024 to 31.08.2024	10
2.	Fourier Optics and computational imaging from 27.08.24 to 28.11.24	20
3.	Three-day workshop on Quantum computing in February 2025.	50
4.	Machine learning using Python from March 2025 - <i>ongoing</i>	20

## Quantum Computing Workshop



## Fourier Optics & Computational Training



## Department of Zoology

S. No.	Summer/Winter Training	No. of beneficiaries
1.	Identification of the major insect pests of stored pulses.	8
2.	Examination of the samples of different pulses for infestation by Pulse beetle, <i>Callosobruchus chinensis</i> (Coleoptera: Bruchidae)	2
3.	Techniques for Rearing the Insect pests of stored grains in the laboratory	2
4.	Study of Behavioural responses of the Pulse beetle, <i>Callosobruchus chinensis</i> (Coleoptera: Bruchidae)	2
5.	Analysing the toxic effects of Dimethyl Pthalate (DMP) which is an endocrine disruptor in <i>Drosophila</i> model.	3
6.	Analysing the toxic effects of Bisphenol-A (BPA), an endocrine disruptor in <i>Drosophila</i> model.	3
7.	Techniques for conducting bioassays using live insect pests of stored grains in the laboratory	4
8.	Study of the effect of Botanicals on the Behavioural responses of the Pulse beetle, <i>Callosobruchus chinensis</i> (Coleoptera: Bruchidae)	3
9.	Analysing the toxic effects of Dimethyl Pthalate (DMP) which is an endocrine disruptor in <i>Euplotes crassus</i> .	3
10.	Analysing the toxic effects of Bisphenol-A (BPA), an endocrine disruptor in <i>Euplotes crassus</i> .	3

**OUTREACH PROGRAMME****Department of Botany**

S. No.	Details of Outreach Programmes	Number of Beneficiaries
1.	Hands on Training in “Handling of Chromosomes” was given to students of Sarvodaya Institute at Sector 17, Dwarka, New Delhi on 23 <sup>rd</sup> – 24 <sup>th</sup> , 2024	62
2.	Hands-on Training on “Gram Staining Techniques for differentiation of Gram Positive and Gram-Negative Bacteria” was given to students of Modern School, Barakhamba Road, New Delhi on 17 <sup>th</sup> April, 2025.	20



## Department of Chemistry

S. No.	Details of Outreach Programmes	Number of Beneficiaries
1.	Outreach Programme on “Entrepreneurial Skill Development for Schools” in collaboration with anthelia: environment council of ITL public school Dated: 31 <sup>st</sup> July 2024	80
2.	Outreach programme on “Analytical techniques for secondary school: analysis of air, soil and water samples” at Sewa Bharti Sewa Dham Vidya Mandir, Behta Hajipur, Loni, Ghaziabad Dated: 22 <sup>nd</sup> January 2025	50
3.	Outreach Programme for Schools On Green Chemistry in Action: Simple and Safe Experiments for Students with Modern Schools, Delhi. Dated: 15 <sup>th</sup> April 2025	30
4.	Outreach program on awareness of common food adulterants with indigenous food adulteration kit Conducted at slum areas of Kingsway camp, GTB Nagar and Otram Lines, Mukherjee Nagar Dated: 28 <sup>th</sup> May 2025	30





## Department of Physics

S.No.	Details of Outreach activities	No. of Beneficiaries
1.	Outreach program for meritorious school students from 16.10.24 – 21.10.24 in which students worked on different science projects in department laboratories.	16
2.	Moon Observation Night event as an outreach activity for school and college students was organized in which three telescopes were placed on the ground of Hindu college to observe craters and different features of the Moon on 16.10.24.	350
3.	Imparting E-waste training and skill from 1.9.24 to 20.11.24	7
4.	“Igniting young mind”, an outreach program for school children on 16.4.25	31



## Department of Zoology

S. No.	Details of Outreach Programmes	Number of Beneficiaries
1.	Spreading awareness about maintenance of personal hygiene, and Demonstration of First Aid methods to the under-privileged children living in the slums, Delhi in coordination with the student volunteers of the Aarambh society (15 Sept., 2024)	25
2.	Outreach program for school students: Hands-on session on Blood physiology. (17 April, 2025)	25

## OUTREACH PROGRAM FOR UNDERPRIVILEGED CHILDREN



## OUTREACH PROGRAM FOR SCHOOL STUDENTS



**NON-TEACHING TRAINING PROGRAMMES****Department of Botany**

S. No.	Title of the experiment	Number of beneficiaries
1.	Working of Microscope with camera	10
2.	Working with Bio-safety cabinet	8

**Department of Zoology**

S.No.	Activity	No. of beneficiaries
1.	Training for the Formulation of fish feed in the laboratory (Oct., 2024)	2
2.	Training for Rearing and maintenance of <i>the</i> culture of stored grain pests (Nov., 2024)	2
3.	Training for Rearing and maintenance of <i>Drosophila</i> culture (Jan., 2025)	2
4.	Training for the Maintenance of Digital records of the purchase of chemicals and equipment, and expenditure of the grant (Feb., 2025)	2
5.	Training for Animal handling in Animal behaviour practicals	2
6.	Training on Handling of fishes and maintenance of aquarium for Ornamental fish culture (March, 2025)	2
7.	Training on the preparation and processing of histological sections using preserved rat tissues (April, 2025)	3

**Preparation of Histological sections for Microtomy and their Processing (April-May, 2025)**

## Setting up of Aquarium and Ornamental Fish Culture (March-April, 2025)



**FACULTY DEVELOPMENT PROGRAM (FDP)****A. Measure to upgrade the skills of Faculty by participating in FDP.****Department of Botany**

<b>S.No.</b>	<b>Faculty upgradation program (FDP/Refresher Course/ Orientation Course Attended)</b>	<b>Faculty</b>
1.	National Level Faculty Development Program on "Urban Infrastructure resilience in context of extreme weather events", organized by NIDM in collaboration with Department of Environmental Studies, University of Delhi from September 9, 2024 to September 13, 2024.	Dr. D Monika Ram
2.	Faculty Training Program on "Fundamental Principles of Integrated Pest Management (IPM)" organized by Department of Zoology, Hindu College, University of Delhi from August 20-22, 2024.	Dr. Gurumayum Suraj
3.	Faculty Training Program on "Bioinformatics" organized by the Department of Zoology, Hindu College and in collaboration with Centyl Biotech on July 18-19, 2024.	Dr. Gurumayum Suraj

**Department of Chemistry**

<b>S.No</b>	<b>Faculty upgrade program (FDP/Refresher Course/ Orientation Course Attended)</b>	<b>Faculty</b>
1.	Completed one week Faculty Development Programme on "Sensory Science in Education: Fragrance and Flavour Awareness" organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Charu Kumar
2.	Completed one week Faculty Development Programme on "Sensory Science in Education: Fragrance and Flavour Awareness" organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Prof. Anju Srivastava
3	Completed one week Faculty Development Programme on "Sensory Science in Education: Fragrance and Flavour Awareness" organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma	Mr. Ajai Kumar

	Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	
4	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Prof. Reena Jain
5	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Geetika Bhalla
6	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Vinita Narula
7	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Sudershan Kumar
8	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Devanshi Magoo

9	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Dinesh Kumar
10	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Sriparna Dutta
11	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Manoj Chahal
12	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Sushma Yadav
13	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	Dr. Jaspreet Kaur
14	Completed one week Faculty Development Programme on “Sensory Science in Education: Fragrance and Flavour Awareness” organized by Department of Chemistry, Hindu College, University of Delhi in collaboration with Mahatma	Dr. Manolata Devi

	Hansraj Malaviya Mission Teacher Training Centre (MH-MMTTC), Hansraj College, University of Delhi Under the Aegis of DBT Star College Scheme 1 <sup>st</sup> to 6 <sup>th</sup> April 2024	
15	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Meenu Shrivastava
16	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Vinita Narula
17	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Prof. Sudershan Kumar
18	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Devanshi Magoo
19	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Dinesh Kumar
20	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Sriparna Dutta
21	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Manoj Chahal
22	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Jaspreet Kaur
23	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Manolata Devi
24	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Anju Singh

25	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Anupama Saini
26	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Shalini Verma
27	Faculty Development Programme on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Under the Aegis of DBT Star College Scheme from September 28, 2024 to October 11, 2024	Dr. Pragya Naulakha

### Department of Physics

S.No	Faculty upgrade program (FDP/Refresher Course/ Orientation Course Attended)	Faculty
1.	NEP 2020 Orientation and Sensitization Programme organized by UGC-MMTTC(GAD-MMTTC), Sri Guru Tegh Bahadur Khalsa College, University of Delhi 16.4.2024- 26.4.2024	Mr. Ginminlen Touthang
2.	Online Workshop on Developing AI Applications in the Physics Domain with Python 10.6.2024-5.7.2024	Prof. Pragati Ashdhir
3.	Two-day workshop on "ESTABLISHMENT OF MODALITIES FOR SKILL ENHANCEMENT COURSES" 04.03.25-05.03.25	Dr. Anita Dhaka
4.	NEP 2020 Orientation and Sensitization Programme organized by UGC-MMTTC(GAD-MMTTC), Sri Guru Tegh Bahadur Khalsa College, University of Delhi 16.4.2024- 26.4.2024	Dr. Neha Batra Bali

### Department of Zoology

S.No.	Faculty upgradation program (FDP/Refresher Course/ Orientation Course Attended)	Faculty
1.	National Level Faculty Development Program on "Programming using Python", organized by Hindu College in collaboration with Spoken Tutorial, IIT Bombay from July 22, 2024 to August 10, 2024.	Dr Amaan Buniyaadi
2.	National Level Faculty Development Program on "Programming using Python", organized by Hindu College in collaboration with Spoken Tutorial, IIT Bombay from July 22, 2024 to August 10, 2024.	Dr. Mohit Kumar

## B. Measure to upgrade the skills of Faculty by Organizing FDP

### Department of Botany

S. No.	Details of FDP	Number of Beneficiaries
1.	Faculty Training Programme on “Bonsai: Style and Design for Beginners” on August 12 & 14, 2024	38



**Bonsai: Style and Design for Beginners held on August 12 & 14, 2024**

### Department of Chemistry

S.No.	Details of FDP	Number of Beneficiaries
1	FDP on "E-learning and MOOCS in Chemistry Teaching using Avogadro" in collaboration with Spoken Tutorial-IIT Bombay Dated: 28th September 2024 to 11th October 2024.	22
2	FDP on interdisciplinary approaches towards sustainability in environment: “Sensory Science & Sustainability in Industrial Approach” Date: April 1 - 6, 2024	38

### Department of Physics

S.No	Faculty upgrade program (FDP/Refresher Course/ Orientation Course Organized)	Number of Beneficiaries
1	"Programming Using Python" was organized in collaboration with the Spoken-Tutorial (ST), IIT Bombay from 22.07.24 – 10.08.24.	35
2.	Photometry Spectroscopy and Surface Plasmon Resonance (SPR) from 17.10.24- 18.10.24.	20

## SPR Workshop:



## Department of Zoology

S.No	Faculty upgrade program (FDP/Refresher Course/ Orientation Course Organized)	Number of Beneficiaries
1.	Bioinformatics, in collaboration with Centyle Biotech, New Delhi 18-19 July, 2024	20
2.	Fundamental Principles of Integrated Pest Management (IPM), in collaboration with ICAR-NCIPM, New Delhi, 20-22 Aug., 2024	30
3.	Advances in Environmental Research: Sustainable Approaches in Water Management, 20-21 March, 2025	15
4.	Hands-On Training in Chick Embryo Development: Enhancing Teaching and Research in Developmental Biology, 8 April, 2025	15
5.	Advanced Biostatistics, 21-23 Jan. 2025	15

## FACULTY TRAINING PROGRAM ON IPM 20-22 AUG. 2024





## ESTABLISHMENT OF LABORATORIES FOR SKILL ENHANCEMENT

### Department of Botany

#### 1. Mushroom Cultivation Center

The Department of Botany has established a Mushroom Cultivation Setup of Hindu College. More than 30 kilograms of mushroom has already been harvested and distributed among the staffs of the college so far.

**Preparation of Histological sections for Microtomy and their Processing (April-May, 2025)**

**Preparation of Histological sections for Microtomy and their Processing (April-May, 2025)**



**Mushroom Cultivation Facilities at the college.**

#### 2. Herbal Garden-Based Approach to Medicinal Plant Conservation

Hindu College has initiated an educational effort through the establishment of a **Herbal Garden** on its campus. The garden currently hosts over 30 medicinal plant species with proven therapeutic value. These include *Ocimum tenuiflorum* (Tulsi), *Withania somnifera* (Ashwagandha), *Aloe barbadensis miller* (Aloe vera), *Tinospora cordifolia* (Giloy), *Bacopa monnieri* (Brahmi), *Phyllanthus emblica* (Amla), and various *Mentha* species (Mint). This initiative not only revitalizes interest in India's traditional knowledge systems but also fosters a culture of sustainability and ecological responsibility among students.



3. **Olfactory Studio**, recently launched and inaugurated in the college is a state-of-the-art facility fostering skill, creativity and innovation, allowing fragrance enthusiasts to experiment with ingredients and their combinations. The lab is well equipped with a vast array of both natural and synthetic fragrance ingredients, small-scale extraction units, and a range of all necessary equipments encouraging endless creative possibilities. The lab is an interdisciplinary hub where students from diverse backgrounds can come together to explore the art and science of perfumery. The students are equipped with the knowledge and the skill preparing them for a wide range of careers in the perfumery industry, from fragrance creation to developing new products or being an entrepreneur in this sector. The establishment of this Olfactory Studio exemplify Hindu College's dedication to pioneering educational initiatives that blend traditional knowledge with contemporary industry needs.



- 4. Tissue Culture Laboratory:** The Department of Botany has recently established a Plant Tissue Culture laboratory in Department of Botany, Hindu College. Currently some economically important crop plants tissues were cultured *viz.* sugarcane, Banana and Gerbera (ornamental). This Plant Tissue Culture laboratory is aimed to serve as a dedicated facility for training, research, and collaboration, focusing on advanced plant tissue culture techniques.



**NEW EXPERIMENTS INTRODUCED****Department of Chemistry**

<b>S. No.</b>	<b>Title of the Activity / Technique</b>	<b>Number of Beneficiaries</b>
1.	Ultrasonic assisted synthesis of Ag nanoparticles/ <i>Techniques used: Ultrasonicator as greener non-conventional energy source</i>	50
2.	Aldol condensation via microwave/green method / <i>Techniques used: Microwave assisted reaction; greener &amp; efficient non-conventional energy source</i>	30

**Department of Physics**

<b>S. No.</b>	<b>Title of the Activity / Technique</b>	<b>Number of Beneficiaries</b>
1.	To estimate the refractive index of film using SPR technique.	10

**PUBLICATIONS**


**Department of Zoology**

- Sharma, A.V. (2024). Development of an innovative and effective trap for rapid removal and collection of live adults of the pulse beetle, *Callosobruchus chinensis* (Coleoptera: Bruchidae) from infested stored pulses, for research studies in the laboratory conditions. *Journal of Entomology and Zoology studies*, 12 (3): 248-250.
- Rastogi, A and Sharma, A.V. (2024). Bio-efficacy of clove *Syzygium aromaticum* against pulse beetle, *Callosobruchus chinensis*. *Indian Journal of Entomology*. DoI. No.: 10.55446/IJE.2024.2284
- Jishon, P., Roshan, N. and Sharma, A.V. (2024). *Journal of Entomological Research*, 48 (Suppl.): 1053-1057.

Few more research papers have been communicated and are under review in different national and international journals.

**College Mentored to Apply for DBT Scheme Information**

Hindu College mentored Nar Bahadur Bhandari Government College, Sikkim to apply for DBT Star College Scheme.

**NAR BAHADUR BHANDARI GOVERNMENT COLLEGE**  
Tadong, Gangtok, Sikkim-737102  
(Accredited by NAAC)  
Email: sgct1977@gmail.com, Phone No. : +91 03592 231119

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Ref. No. 777/NBBGC (Principal) 2025 Date: 04.04.2025

To,

The principal  
Hindu College,  
New Delhi.

**Sub: Letter of Appreciation.**

Respected Principal,

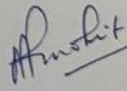
**"Greetings from Nar Bahadur Bhandari Government College, Tadong, Gangtok"**

I am, writing to express my sincere gratitude and appreciation for your leadership and unwavering support to our institution. I would like to specifically acknowledge Professor, Reena Jain, Vice Principal, Dr. Varunendra S. Rawat, Professor Archana Jain and Dr. Ananya Barua for mentoring and helping for the submission of DBT Star College Scheme. Their help and support had a tremendous positive impact on our faculty members.

We are immensely grateful and proud to be associated with your esteemed institution under Vidya Vistar Scheme.

Thanking You,

Yours sincerely,

  
Dr. D. Purohit  
Principal  
NBBGC, Tadong