



Acharya Narendra Dev College

University of Delhi

DBT STAR STATUS
Progress Report

2022-2023



Acharya Narendra Dev College

DBT STAR STATUS

Progress Report

Assessment duration : 2022-2023

Duration in years : 1 year

Details of Departments' Supported

S. No.	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, Certificate etc) offered	Regular Faculty members	
			With Ph.D.	Without Ph.D.
			Total =49	
1	Biomedical Science	B.Sc. (Hons)	05	Nil
2	Botany	B.Sc. (Hons), B.Sc (Prog) Life Science	06	Nil
3	Chemistry	B.Sc. (Hons), B.Sc (Prog) Life Science, B.Sc. (Prog) Physical Sciences, M.Sc.	12	Nil
4	Computer Science	B.Sc. (Hons), B.Sc. (Prog) Physical Sciences	06	Nil
5	Electronics	B.Sc. (Hons)	05	Nil
6	Physics	B.Sc. (Hons), B.Sc. (Prog) Physical Sciences	10	01
7	Zoology	B.Sc. (Hons), B.Sc (Prog) Life Science	06	01


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Acharya Narendra Dev College
(University of Delhi)


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A. *Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).*

The seven departments of the College involved in the DBT STAR STATUS programme have been executing the scheme excellently, focusing on its goals and objectives.

1. The grant by DBT under STAR College Scheme has helped the College in developing Skill Centres (Appendix I) for skill enhancement of all the stakeholders of the Institute (Appendix V). The institute has developed Sericulture Skill Center, Mushroom Research and Skill Development Centre (MRSDC), Zebrafish Culture Facility and Virtual Labs. The development of Skill Centers have given an opportunity to organize National Level Skill Enhancement workshops for Faculty, Non-Teaching (Appendix II) and UG students (Appendix VIII).
2. The institution has established a cutting-edge Central Instrumentation facility housing advanced equipment such as AAS, SPR, 3-D Printers, PCR machines, Microscopes, among others. These resources facilitate interdisciplinary projects for students. Moreover, the college showcased its 3-D printer at the grand finale of DU Centenary Celebration, receiving high acclaim from various University stakeholders (Appendix V)
3. The financial help from DBT Star College scheme has gone a long way in providing support as also inspiring faculty members to rekindle their spirit of research by way of writing books, contributing chapters in books, garnering academic awards, publishing in Scopus indexed Journals / Proceedings and peer reviewed international/national journals of repute and the same are indexed in (Appendix IX)
4. The grant from the Department of Biotechnology (DBT) has indeed presented Acharya Narendra Dev College (ANDC) with a valuable platform to host International Conferences. Such support plays a pivotal role in encouraging academic interactions, sharing knowledge, and promoting collaborative research initiatives. Organizing international conferences holds numerous advantages for both ANDC and the wider academic fraternity. In the current year, ANDC has successfully coordinated two international e-conferences, (Appendix IV), underscoring the impact of this support
5. The College has strenghted itself with the DBT STAR Grant and is organizing International workshop and outreach program for school students and training programs for Post graduate students. Many PG students are doing their M.Sc. dissertation under the mentorship of ANDC faculty.

B. *Any Novel aspect introduced or planning to introduce during the Scheme duration.*

Novel Aspects Introduced

- i. Establishment of Language Lab
- ii. Establishment of Sericulture Lab
- iii. Value Addition Certificate Courses initiated under Acharya Narendra Dev Kaushal Kendra


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- iv. Outreach Programs were conducted for school students of Hamirpur rural area, Bani and Biar
- v. Central Instrumentation Facility: The State-of-art equipments from all the Departments procured during I st and II nd Phase of Grant are accessible to school students/UG/PG students to work as summer interns

Planning

1. To introduce more skill enhancement courses in the college like :

- (i) Forensic Science Skill Development Centre
- (ii) IT Skills, Skill Development Centre
- (iii) Soft Skills, Skill Development Centre
- (iv) Hydroponic

2. The College is also Planning to adopt Green Initiatives like:

- (i) Vermicompositing
- (ii) Medicinal Herbal Garden

C. Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant. (Max 3 points within 300 words)

Initially there were problems with PMFS but with the co-operation of DBT Staff members, everything was sorted smoothly.


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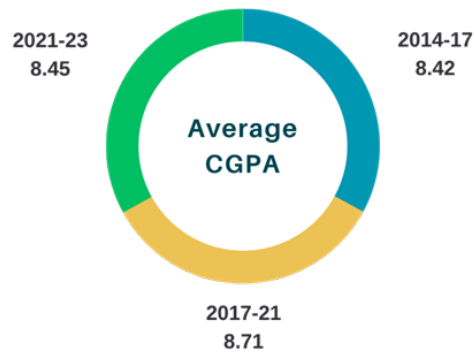
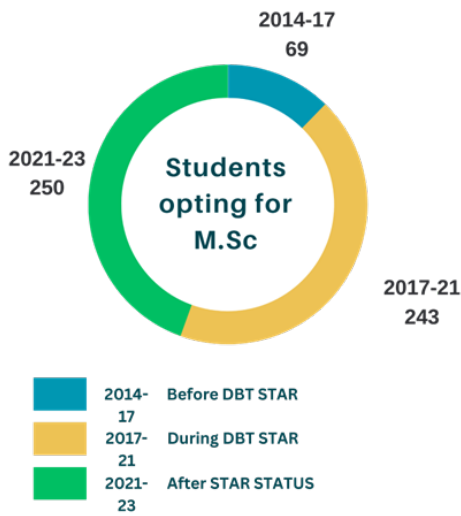
Key Performance Indicators

S. No.	Indicator	Pre-support (2014-2017)	During /After Support (2022-2023)
1	No. of students passing out (%) Students Admitted/passing out (pass %)	100%	100%
2	No. of students opting for M.Sc.	Biomedical Science: 09 Botany: 07 Chemistry: 21 Computer Science: 08 Electronics: 09 Physics: 07 Zoology: 08	Biomedical Science: 15 Botany: 15 Chemistry: 12 Computer Science: 15 Electronics: 14 Physics: 18 Zoology: 15
3	Average marks (CGPA)	Biomedical Science: 7-8 Botany: 7-8 Chemistry: 7-8 Computer Science: 8-9 Electronics: 8-9 Physics: 8-9 Zoology: 7-8	Biomedical Science: 8-9 Botany: 8-9 Chemistry: 8-9 Computer Science: 8-9 Electronics: 7-8 Physics: 8-9 Zoology: 8-9
4	No. of new experiments introduced (Appendix VIII)	NIL	Biomedical Science: 33 Botany: 19 Chemistry: 21 Computer Science: 44 Electronics: 37 Physics: 29 Zoology: 42
5	Publications (scopus indexed) /patents, if any (Appendix IX)	Biomedical Science: 05 Botany: 04 Chemistry: 04 Computer Science: 04 Electronics: 02 Physics: 12 Zoology: 10	Biomedical Science: 20 Botany: 08 Chemistry: 29 Computer Science: 09 Electronics: 10 Physics: 25 Zoology: 24
6	Training received by faculty (Appendix X)	Biomedical Science: 08 Botany: 03 Chemistry: 03 Computer Science: 00 Electronics: 00 Physics: 04 Zoology: 06	Biomedical Science: 15 Botany: 04 Chemistry: 08 Computer Science: 03 Electronics: 27 Physics: 08 Zoology: 12
7	Exhibitions/seminars /training courses conducted (Appendix XI)	Biomedical Science: 04 Botany: 04 Chemistry: 03	Biomedical Science: 12 Botany: 03 Chemistry: 06

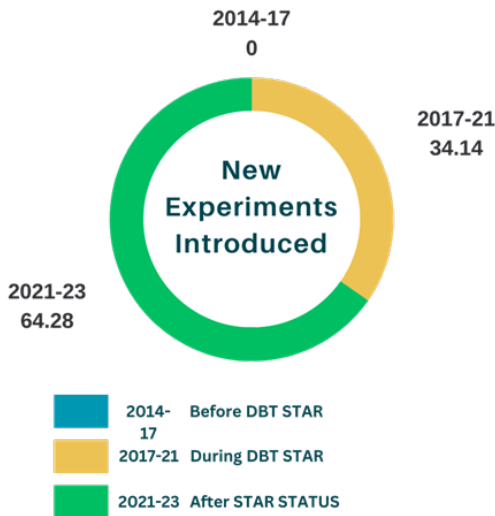
		Computer Science:04 Electronics: 03 Physics: 02 Zoology: 04	Computer Science: 04 Electronics: 05 Physics: 04 Zoology: 10
8	Outreach activities (Popular lectures) (Appendix XII)	Biomedical Science: 07 Botany: 06 Chemistry: 02 Computer Science:2 Electronics: 05 Physics: 02 Zoology: 06	Biomedical Science: 32 Botany: 07 Chemistry: 01 Electronics:29 Physics: 05 Zoology: 10
9	Colleges mentored to apply for DBT Star College grants	NA	One
10	Interdisciplinary Projects (Appendix VII)	Nil	67
11	Invited lectures (Appendix XIII)	02 Lectures/Year/Department	Biomedical Science: 11 Botany: 02 Chemistry: 02 Computer Science:02 Electronics: 01 Physics: 04 Zoology:32


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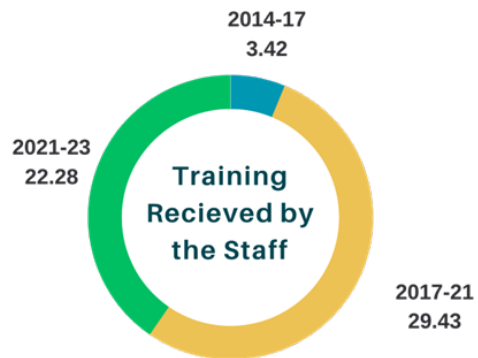
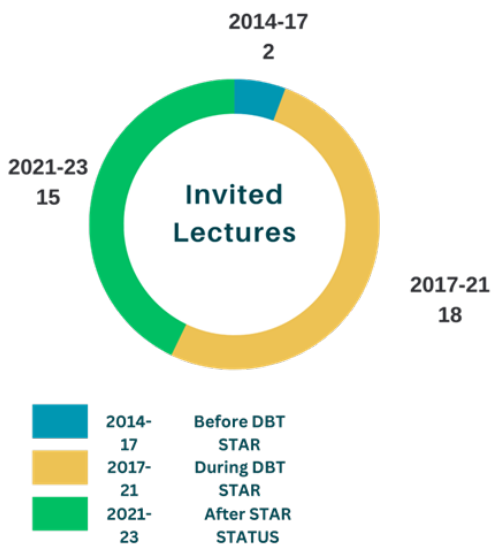

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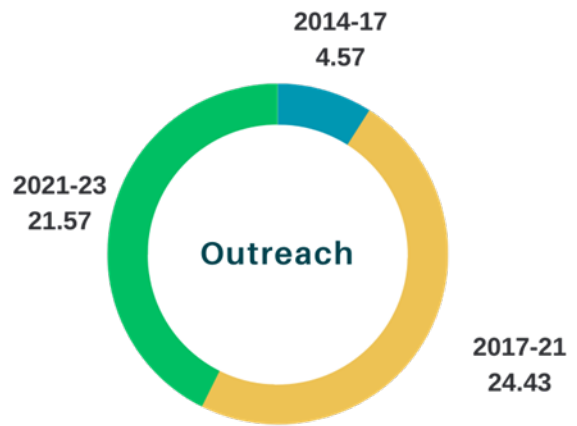
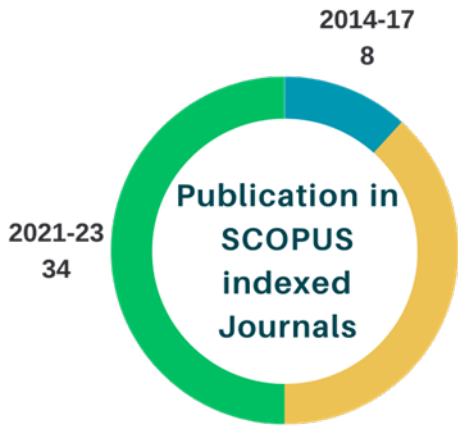
Student Performance and interest toward Higher Studies



Hands-on Exposure to newly introduced experiments

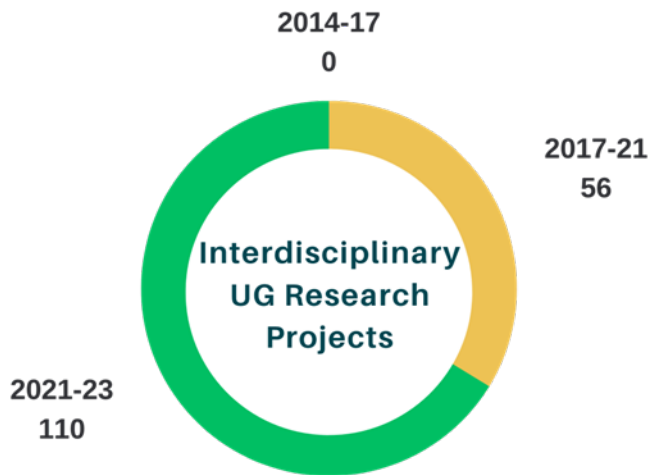


Improving the knowledge base of students and staff



Academic Improvement of Teaching Staff

Exposure to Interdisciplinary Research for UG Students




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Appendix I

Development of Skill Centres @ANDC

Acharya Narendra Dev College's emphasis on the establishment of skill center programs signifies a proactive approach in imparting students with hands-on and relevant expertise. These centers have the potential to significantly enhance students' capabilities, preparing them for success in their selected domains and the professional realm. Moving forward, these skill centers will open avenues for students to engage in internships, cooperative programs, and industry projects, enabling them to acquire practical experience.

(A) Sericulture Skill development Centre

Co-ordinators: Prof. Seema Makhija, Mr Sanjay Vohra


Given the promising employment and entrepreneurship opportunities in the sericulture industry, Acharya Narendra Dev College has established a Skill Development Centre in Sericulture. The primary goal is to provide students with comprehensive skills and knowledge in sericulture techniques. An additional course focusing on Sericulture will be introduced for undergraduate students, and a job-oriented program will be offered to unemployed graduates. This training aims to equip students to pursue a career in sericulture, enabling them to establish their own sericulture farms or silk production units. Moreover, it opens avenues for potential employment in other sericulture institutes or textile industries associated with silk

The center aims to offer extensive expertise in sericulture skills and methodologies, coupled with hands-on experience in breeding, rearing, harvesting cocoons, and post-cocoon processing. Establishing partnerships with industry stakeholders, local silk producers, and research institutes in the relevant domain will ensure students gain practical exposure. The center will provide comprehensive training to both students and faculty in every facet of sericulture. This training will enable students to comprehend the biological aspects of silkworms and their nutritional needs to produce high-quality silk.

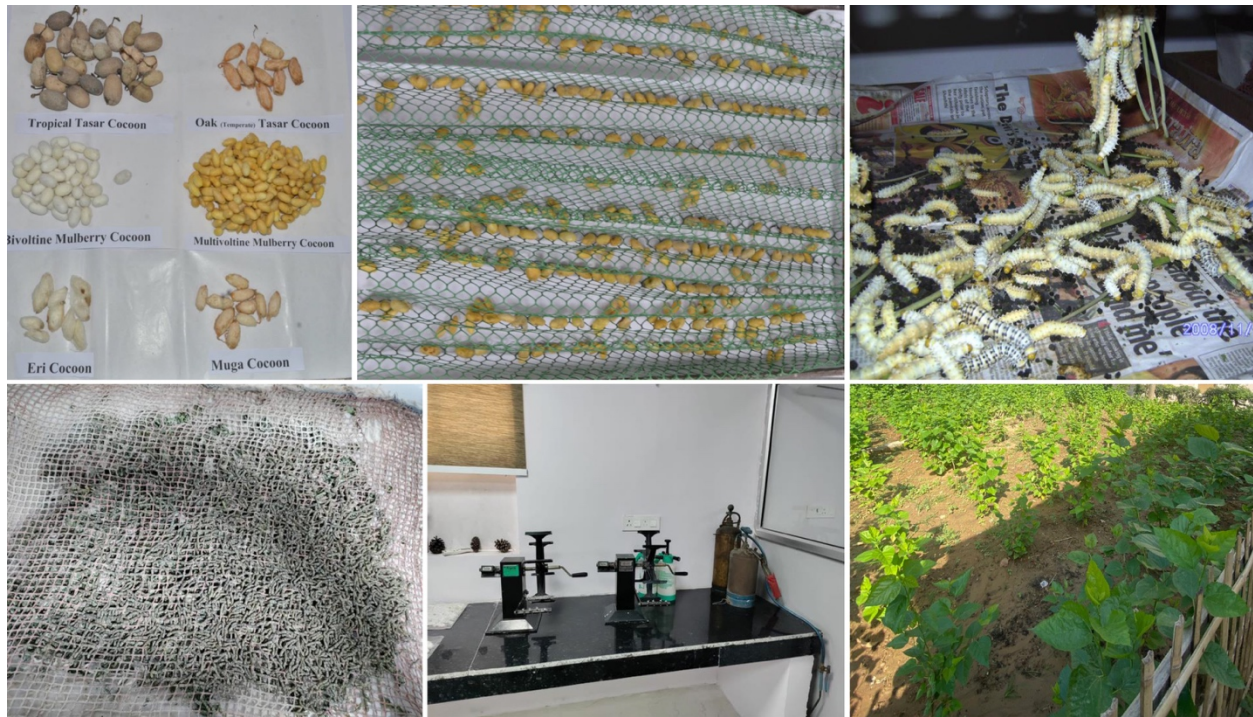
India is the only country in the world that produces all the four types of commercial silks, namely, Mulberry, Eri, tropical and oak *Tassar* and *Muga*. There is a scope of development of sericulture industry in India for various reasons:

- a. Climatic conditions favour the culture of all the varieties of silk moths (Mulberry, Eri, *Muga*, *Tassar*).
- b. Availability of cheap labour.
- c. No need for highly skilled and educated labour, which increases the employability of unskilled and semi-skilled youth
- d. Low cost in setting up rearing centres, with the use of simple and inexpensive equipment.
- e. Easily manageable pest control methods.


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f. No major health hazard related to the industry.



SERICULTURE SKILL DEVELOPMENT CENTRE

Major Objectives:

The Skill Development Center for Sericulture aims to develop qualified professional manpower in Silk and Sericulture sector. Therefore, the course focuses on training and providing expert human resource to silk industry.

The SDC has following objectives:

- To train the students in techniques of silk production
- Recognize various species of silk moths in India, and Exotic and indigenous races.
- To give knowledge about mulberry cultivation, silkworm Rearing techniques to the students.
- To develop human resource empowered to handle the sericulture units/ corporate sector.
- To create awareness among youth about the opportunities and employment in Sericulture.
- To increase the employability.
- To inculcate the entrepreneurship and capacity building among the students.
- To train the people from poor economic background.

This year College organized a 7 Day Faculty Development Program on *Sericulture: Rearing and its Applications* for the faculty of University of Delhi in which hands-on experience was given on rearing methods for mulberry silkworm.



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(B) Mushroom Research and Skill Development Centre (MRSDC)

Coordinators: Dr Anupama Shukla, Dr Anita Narang, Dr Vineet Kumar Singh, Dr Sumit

The Mushroom Research and Skill Development Center (MRSDC) at Acharya Narendra Dev College was established on 8th March 2022 within the Department of Botany, operating under the DBT-STAR status scheme. Its primary objective is to offer a mushroom culture facility to students enrolled in the SEC course focused on Mushroom Cultivation Technologies. Apart from imparting skills related to cultivating diverse mushroom varieties, MRSDC has expanded its role to encompass a wide array of activities. These include engaging in research, ensuring high-quality spawn production, conducting outreach programs, delivering training sessions, and extending its services to dispel prevalent myths surrounding mushroom cultivation and consumption. Mushroom technology is hailed as an environmentally friendly approach with the potential to address various societal and environmental challenges, such as air pollution, malnutrition, unemployment, and promoting women empowerment

The major activities conducted at MRSDC in year 2022-2023 are:

1. **Maintaining germplasm:** Starting with cultivation of single variety (Blue oysters) using borrowed spawns to establishing and maintaining the pure culture of more than 10 different mushroom varieties within a single year is really an achievement. MRSDC is now maintaining the pure cultures of *Pleurotuseryngii*, *P. florida*, *P. ostreatus*, *Agaricus bisporus*, Shiitake, Portebello, *Calocybe indica*, blue oyster, yellow oyster and *Ganoderma* sp.
2. **Spawn Preparation:** MRSDC is also involved in standardizing the protocols for spawn preparation of the species it is maintaining. Till now, it is preparing and maintaining 500 gm commercial bags for spawns for 5 species namely blue oysters, yellow oysters, button mushroom, shiitake and portebello mushrooms which are readily available.
3. **Mushroom cultivation:** As common routine different mushrooms are grown on different sustainably available substrates.
4. **Training and Outreach activities:** Within a year, more than 150 students have been trained in mushroom cultivating techniques where they learnt to grow different mushrooms in different seasons and know-how of growing and cultivate major mushrooms on minimal and locally available material, environmental conditions etc.
5. **Research:** In research domain, MRSDC is extensively working on screening different inexpensive substrate available locally and easily which can be employed in growing mushrooms. The focus is on standardizing the methods and technologies to grow mushrooms on lignocellulosic material available in the college premises and developing the easiest protocol for each of the substrate. Besides, we are also interested in utilizing the spent mushroom substrate and enhance its market value. For this we have started working on extraction and purification of lignin degrading enzymes (laccase) from the


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spent mushroom substrate and still utilizing the SMS in production of packaging material as substitute of thermocol and plastic packaging.

Accolades to MRSDC:

The students who worked diligently in MRSDC in various research projects presented their work as Oral or as poster at various International and National platforms like conferences, seminars etc. and won prizes too. The few examples are:

1. Vridhi Singh: Best Oral presentation in the ICSSR sponsored International Seminar on 'Technology for Environmental Sustainability, Socio-Economic Responsibility and Associated Entrepreneurial Opportunities in Society and Rural Environment', organized by Sri Aurobindo College, University of Delhi on 16th-17th March 2023.
2. Mohd. Afham: Best Oral presentation in the ICSSR sponsored International Seminar on 'Technology for Environmental Sustainability, Socio-Economic Responsibility and Associated Entrepreneurial Opportunities in Society and Rural Environment', organized by Sri Aurobindo College, University of Delhi on 16th-17th March 2023
3. Subhanshu Krishna: First Prize in Paper presentation at the Samara' 23 the Annual Fest organized by Bloom-The botanical society of Ramjas College, University of Delhi
4. Subhanshu Krishna, Mohd.Afham and Vridhi Singh: First prize in Botanophily, the paper presentation competition at 'Inflorescence' 2023 organized by Sanjeevani, the botanical society of Hindu College, University of Delhi on 5th April 2023.



MUSHROOM RESEARCH AND SKILL DEVELOPMENT CENTRE @ANDC

(C) Establishment of Zebrafish (*Danio rerio*) Culture Lab

Convenor: Dr. Monica Misra; Co-Convenor: Ms. Bhumika Chauhan

मत्स्य Lab - Zebrafish Culture facility, established at Acharya Narendra Dev College in January 2022 through the support of the DBT Star Scheme, aims to inspire and engage budding scientists in research pursuits.. It provides a hands-on experience in laboratory practices, delving into the captivating realm of live animal research and nurturing a more empathetic approach towards our environment and its creatures. Notably, we stand as the second college within the University of Delhi to initiate the development of a Zebrafish lab. Presently, the facility is dynamically managed by undergraduate students deeply engrossed in their research projects. The lab was inaugurated by Ms. Atishi Singh, Minister of Education of Delhi in April 2022.

Zebrafish (*Danio rerio*) has become a prominent model organism in scientific research due to their unique characteristics. They share a high degree of genetic similarity with humans and exhibit remarkable regenerative abilities, making them invaluable in studying developmental biology, genetics, and disease mechanisms. Zebrafish research holds immense potential for advancing our understanding of fundamental biological processes and developing therapeutic interventions for human diseases. Zebrafish is chosen as an ideal model for the research due to the following advantages -

- A fully sequenced genome and easy manipulation of its genome.
- A similar genetic structure to humans. They share 70% of genes with humans and 84% of genes known to be associated with human disease have a Zebrafish counterpart.
- High fecundity
- Short generation time (about 3 months)
- Rapid embryonic development (24 hours)
- External fertilization
- The translucent embryo allows the easy study of the different developmental stages.
- Embryos form complete organ systems including the heart, intestine, and blood vessels within 48hr postfertilization.

The College is in the process of Registration of Internal Animal Ethical Committee (IAEC). Once approved by the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA), Govt. of India, the breeding of fishes and study of various life stages and behavioural patterns will be done to establish patterns in the fish and its resemblance to humans

The research aim of the laboratory is to inform action, gather evidence for theories, contribute to developmental biology and knowledge in the field of Zebrafish study, aiming to observe behavioral changes and reproductive cycle of zebrafish in a controlled environment.

UG Research Projects Conducted


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- (1) To study the Effects of Ethanol Exposure on different developmental stages of Zebrafish.
- (2) To investigate the effects of different diets on the growth and development of Zebrafish.
- (3) Establishment of the culture and observe their growth 120 hours post-fertilization.

Outreach Workshop: One Day Inter-College Workshop

Organised Intercollege workshop for students from different college of the University of Delhi attended the workshop. The zebrafish workshop is a vital platform for students. its goal is to impart essential knowledge and skills related to zebrafish as a model organism. participants will learn zebrafish husbandry, genetics and techniques enabling them to build interest for scientific research in zebrafish.


Objectives and learning Goals

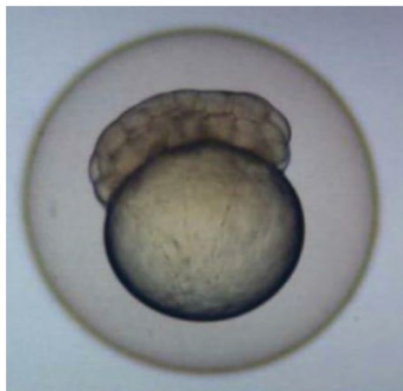
- Introduce zebrafish as a model organism.
- Teach zebrafish handling and care skills.
- Provide overall hands-on training.
- Familiarize participants with experimental techniques.
- Inspire participants to explore zebrafish research.

Following Topics were discussed during the workshop:

- Developmental Stages of Zebrafish
- Aquarium Keeping
- Types of feeds
- Egg Water Preparation
- Instrumentation
- Hands-on session on setting up of breeding units


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(C) Virtual lab at ANDC (V-Lab@ANDC)

Coordinator: Prof. Seema Makhija (Zoology), Dr Sumit Sahni and Dr Vineet Singh (Botany)

Conveners: Dr Sanjeeta Rani (Physics), Prof. Sharanjit Kaur (Computer Science), Dr Anita Narang (Botany), Dr Neeti Mishra (Chemistry)

Project Leads: Mr Ayush Mishra, and Mr Vaibhav Thapliyal, B.Sc (H) Physics II Year

Acharya Narendra Dev College pioneered the concept of a Virtual Lab (V-Lab), aiming to grant undergraduate science students remote access to various labs via the internet. This initiative marked the college as the trailblazer in implementing V-Lab within the University of Delhi.

The Virtual Lab empowers students to comprehend, learn, and conduct practical experiments remotely with just a click. It encompasses a comprehensive Learning Management System (LMS) that offers a spectrum of learning resources, including supplementary web materials, video lectures, animated demonstrations, and self-assessment tools. The platform hosts web-enabled experiments designed for remote operation and observation, stimulating curiosity and fostering innovation among students. This approach aids in learning both fundamental and advanced concepts through remote experimentation.

The course design for various labs and experiments available on V-Lab@ANDC is forward-thinking, adopting a four-quadrant model for e-content, aligned with the principles of the National Education Policy (NEP)-2020. The V-Lab@ANDC website is curated and managed by students themselves, covering four domains: Biological Science, Chemical Science, Electronics, and Physical Science, encompassing seven departments: Biomedical Science, Botany, Chemistry, Computer Science, Electronics, Physics, and Zoology.

While the inception of V-Lab@ANDC initially aimed to address challenges stemming from the COVID-19 pandemic in the teaching and learning processes, its scope has since broadened. Students now have the flexibility to conduct experiments around the clock, utilizing sophisticated and costly instruments multiple times, generating measured data for several experiments, all while optimizing resource utilization. Through V-Lab@ANDC, the college upholds its ethos of 'Preparing for the future' by venturing 'Beyond the classroom' and extending the traditional boundaries of practical labs.

The lab is developed under four domains:

Biological Science: Developed by the Department of Biomedical Science, Botany and Zoology

Chemistry: Developed by the Department of Chemistry

Computer Science: Developed by the Department of Computer Science

Physical Science: Developed by the Department of Electronics and Physics

Bootcamps for V-Lab Development. This year two Bootcamps were organized:

- i. One-week Revisit Bootcamp 1.1 for V-Lab Development (9- 14 January, 2023)

Conveners: Prof Seema Makhija, Prof Sharanjit Kaur, Dr Pooja Bhagat. Dr Sumit Sahni and Dr Vineet K Singh

Date: April 24-28, 2023

Number of Participants: 21

Acharya Narendra Dev College, affiliated with the University of Delhi, stands as a distinguished hub for education and research in India. Committed to delivering high-quality education, the college emphasizes diverse exposure and hands-on research, aligning with the philosophy of 'preparing for the future' by fostering innovation beyond traditional classroom boundaries.

In collaboration with V-Lab@ANDC, the Computer Science Department, under the DBT Star College Scheme, organized 'Revisit Bootcamp 1.1 for V-Lab Development,' a week-long workshop from January 9 to January 14, 2023. Targeted at first and second-year students across all streams of the college, the bootcamp primarily engaged students interested in joining the V-Lab team and contributing to the development of V-labs for their respective courses.

The workshop was led by resource persons Mr. Shahnawaz Khan and Mr. Pankaj Sahu, both final year students pursuing B.Sc.(H) Computer Science and B.Sc.(P) Physical Science with CS, respectively, at the college. The objective of the workshop was to acquaint students with the fundamental building blocks of web development, with a focus on V-Lab Development.

On the first day, Prof. Ravi Toteja, the Officiating Principal, welcomed participants and discussed the significance of V-labs in today's educational context. Dr. Sumit Sahni, the Nodal officer of the V-Lab, provided an introduction to V-labs. Mr. Ayush Mishra, a final year student, shared his experiences in designing V-labs.

Over the following days, the resource persons introduced the basic attributes of HTML and CSS, followed by more advanced features of these languages. They also delved into selectors, animations, and introduced participants to the basics of JavaScript. Each day included a practice session for students to reinforce the topics covered.

On the sixth day, a session was dedicated to addressing queries and evaluating the projects assigned at the beginning of the workshop. Following the evaluation, Prof. Sharanjit Kaur and Dr. Sunita Narang interacted with the students to gather their feedback and assess their interest in future workshops. Students keen on participating in V-lab activities were encouraged to reach out to their respective faculty members for further details

- ii. Five day Bootcamp on 'V-Lab Development 2.2 and Bootcamp on 'V-Lab Development (Building Blocks of Simulator)'

Conveners: Prof Seema Makhija, Prof Sharanjit Kaur, Dr Pooja Bhagat. Dr Sumit Sahni and Dr Vineet K Singh

Date: April 24-28, 2023

Number of Participants: 21

Organized a five day Bootcamp on 'V-Lab Development 2.2' and 'V-Lab Development (Building Blocks of Simulator)' under the aegis of DBT STAR College Scheme from April 24-28, 2023. This workshop was organized from April 24-28, 2023 for the First and Second year students of all streams of the college. The resource persons were Mr Vaibhav Thapliyal. Mr. Shah Nawaz Khan and Mr. Pankaj Sahu who were final year students of B.Sc.(H) Physics, B.Sc.(H) CS and B.Sc.(P) Physical Science with CS respectively from the college. Mr. Vibhor also addressed the participants and illuminated the students about how Animation videos related to the experiment could be added to the college virtual lab youtube channel and it's link should be embedded to the webpage.

Day 1: Introduction to web development. Foundation of web dev was introduced to the students like HTML, CSS and JS. What are the significance of using these functionalities. How to link these files in HTML. How the web works behind the scene. Introduction to web development. Foundation of web dev was introduced to the students like HTML, CSS and JS. What are the significance of using these functionalities. How to link these files in HTML. How the web works behind the scene. Classes and id, tags, types of linking was deeply discussed. In javascript queryselectors, eventlistener, functions were explained with live project of creating a form which will store user's data in localstorage of the system which can be fetched at anytime.

Day 2: Classes and id's, tags, types of linking was deeply discussed. In javascript-queryselectors, eventlisteners, functions were explained with live project by creating a form which will store user's data in localstorage of the system which can be fetched at anytime. How simulators work in Virtual lab was explained. Introduction to Figma was given with live project of Malus Law. Participants designed the apparatus required to perform the experiment of Malus law.

Day 3: Uses of objects and Arrays in programming was indepth explained with their properties like foreach, map, slice, splice etc. Introduction to data structure and algorithm was also discussed over the workshop. Participants created the web page for simulation which have the functionality of full screen icon, when clicked user will enter into full screen mode, then all the apparatus related to the experiment will be displayed.

Day 4: Hands on tutorial in figma was introduced with live project of car racing game. Participants designed the theme of the game in figma then used it in builing the game using JS.Simulated the setup based on the requirement of experiment using Javascript. Hence Malus law experiment was created in virtual lab.

Day 5: The Workshop ended with the note of Principal sir that All the participating students who have participated in the workshop will be given some experiments which can be of any department. Students have to complete it within the stipulated time and have to give the updates related to the allotted experiment to the teacher every week.


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Names of students involved in Virtual Lab

S.No.	Name	Course	Project	Mentors	Link
1	Aliya Ayush Mishra Vaibhav Thapliyal	B.Sc. (P) Physical Science with Computer Science II Year	Data Frame -1	Dr Sharanjit Kaur	https://www.vlab.andcollege.du.ac.in/csSc/crud_df/addupdatedel.ete.html
2	Sakshi Gar g Ayush Mishra Vaibhav Thapliyal	B.Sc. (P) Physical Science with Computer Science II Year	Data Frame-2	Dr Sharanjit Kaur	https://www.vlab.andcollege.du.ac.in/csSc/harsh_df/dataFrame.html
3	Vivek Sharma Ayush Mishra Vaibhav Thapliyal	B.Sc. (P) Physical Science with Computer Science II Year	Data Frame-1	Dr Sharanjit Kaur	https://www.vlab.andcollege.du.ac.in/csSc/crud_df/addupdatedel.ete.html
4	Pankaj Sahu Ayush Mishra Vaibhav Thapliyal	B.Sc. (P) Physical Science with Computer Science II Year	Data Frame-3, Data Frame-2	Dr Sharanjit Kaur	https://www.vlab.andcollege.du.ac.in/csSc/harsh_df/dataFrame.html https://www.vlab.andcollege.du.ac.in/csSc/crud_df/addupdatedel.ete.html
5	Palak Sharma Ayush Mishra	B.Sc. (P) Physical Science with Computer	Data Frame-3	Dr Sharanjit Kaur	https://www.vlab.andcollege.du.ac.in/csSc/crud_df/addupdatedel.ete.html

	Vaibhav Thapliyal	Science II Year			
6	Amitesh Kumar Singh Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Computer Science II Year	Bubble Sorting	Dr Sharanjit Kaur	https://www.vlab.andcollege.edu.ac.in/csSc/bubble_sort/bubble_sorting.html
7	Nilesh Pandey Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Computer Science II Year	Bubble Sorting	Dr Sharanjit Kaur	https://www.vlab.andcollege.edu.ac.in/csSc/bubble_sort/bubble_sorting.html
8	Shahnwaz Khan Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Computer Science II Year	Prime Number, Bubble Sorting	Dr Sharanjit Kaur	https://www.vlab.andcollege.edu.ac.in/csSc/p_num/dataFrame.html
9	Ananya Shukla Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Computer Science II Year	Bubble Sorting	Dr Sharanjit Kaur	https://www.vlab.andcollege.edu.ac.in/csSc/bubble_sort/bubble_sorting.html
10	Harsh Bamotra	B.Sc. (H) Computer Science II	Prime Number	Dr Sharanjit Kaur	https://www.vlab.andcollege.edu.ac.in/csSc/p_num/dataFrame.ht

	Ayush Mishra Vaibhav Thapliyal	Year			ml
11	Sushant Sharma Ayush Mishra Vaibhav Thapliyal	B.Sc. (P) Physical Science with Computer Science II Year	Data Frame-1	Dr Sharanjit Kaur	https://www.vlab.andcollege.edu.ac.in/csSc/bubble_sort/bubble_sorting.html
12	Ayush Mishra Vaibhav Thapliyal Kalyani Kumari	B.Sc. (H) Physics, II Year B.Sc. (H) Biomedical Science, III Year	Plastic Impressions of Footprint	Dr Archna Pandey Dr Ritu Khosla	https://www.vlab.andcollege.edu.ac.in/bioSc/bms/plastic_impression.html
13	Ramgane sh Pandey Vridhi Singh Mohd. Afham Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Botany, II Year B.Sc. (H) Physics, II Year	Quantification of Unknown DNA	Dr Sumit Sahni Dr Vineet K Singh	https://www.vlab.andcollege.edu.ac.in/bioSc/botany/unknown-DNA/quantification.html
14	Avnija Tyagi Ritika Chandel Sejal Arora	B.Sc. (H) Zoology, III Year	Isolation of genomic DNA from <i>E.coli</i>	Prof. Ravi Toteja Prof. Seema Makhija	https://www.vlab.andcollege.edu.ac.in/bioSc/zooology/eColi/dna-extract.html

	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year		Dr Rahul Dev	
15	Avnija Tyagi Ritika Chandel Sejal Arora Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Zoology, II Year B.Sc. (H) Physics, II Year	Isolation of plasmid DNA from <i>E.coli</i>	Prof. Ravi Toteja Prof. Seema Makhija	https://www.vlab.andcollege.edu.ac.in/bioSc/zooology/isolation/plasmid-DNA.html
16	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Height-Weight Experiment	Prof. Ravi Toteja Prof. Seema Makhija	https://www.vlab.andcollege.edu.ac.in/bioSc/zooology/hnw/height.html
17	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Redox Titrations	Dr Manisha Jain Dr NeetiMisra (Chemistry)	
18	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Monte-Carlo Estimation of Pi	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/mpPhy/monteCarlo/monte-main.html
19	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Bisection Method for finding roots of polynomial	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/mpPhy/bisection/bisection-main.html
20	Ayush Mishra Vaibhav	B.Sc. (H) Physics, II Year	Newton-Raphson Method for finding roots	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/mpPhy/newtonRaphson/newton-

	Thapliyal		of equations		main.html
21	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Secant Method for finding roots of polynomial	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/mpPhy/secant/secant-main.html
22	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Iterative Method for finding roots of polynomial	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/mpPhy/iterative/iterative-main.html
23	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Trapezoidal Rule for definite integral	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/mpPhy/trapezoidal/trapezoidal-main.html
24	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Simpson's 1/3 Rule for definite Integral	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/mpPhy/simpson1by3/simpson13-main.html
25	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Eulers Method for Ordinary Differential Equation	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/mpPhy/euler%20method/euler-main.html
26	Ayush Mishra Vaibhav Thapliyal	B.Sc. (H) Physics, II Year	Modified Eulers Method for Ordinary Differential Equation	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/mpPhy/modified%20euler%20method/eulerM-main.html
27	Vaibhav Thapliyal	B.Sc. (H) Physics, III Year	Verification of Palindrome	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/compPhysics/palindrome/palindome.html
28	Vaibhav Thapliyal	B.Sc. (H) Physics, III Year	Find the LCM of two given numbers	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/compPhysics/lcm/lcm.html
29	Vaibhav Thapliyal	B.Sc. (H) Physics, III Year	Generate Fabonacci series	Dr Sanjeeta Rani	https://www.vlab.andcollege.edu.ac.in/phySc/compPhysics/fibona

					cci/fibonacci.html
30	Rajkumar Jain Basab Vaibhav Thapliyal	B.Sc. (H) Zoology, III Year B.Sc. (H) Physics, III Year	Enzymatic Activity of Trypsin	Dr Aparna Sharma Prof. Ravi Toteja Prof. Seema Makhija	https://www.vlab.andcollege.edu.ac.in/bioSci/zoology/trypsin/trypsin.html
31	Harshita Khushwaha Khushboo Sheelam Saroj Basab Vaibhav Thapliyal	B.Sc. (H) Zoology II Year B.Sc. (H) Physics, III Year	Cytochemical demonstration for the presence of DNA in ciliates	Prof. Ravi Toteja Prof. Seema Makhija	https://www.vlab.andcollege.edu.ac.in/bioSci/zoology/dna/dna.html
32	Harshita Khushwaha Khushboo Sheelam Saroj Basab Vaibhav Thapliyal	B.Sc. (H) Zoology, II Year B.Sc. (H) Physics, III Year	Cytochemical demonstration for the presence of Proteins by Mercurobromophenol Blue	Prof. Ravi Toteja Prof. Seema Makhija	https://www.vlab.andcollege.edu.ac.in/bioSci/zoology/mbb/mbb.html
33	Harshita Khushwaha	B.Sc. (H) Zoology,	Cytochemical demonstration	Prof. Ravi Toteja	https://www.vlab.andcollege.edu.ac.in/bioSci

	ha Khushboo Sheelam Saroj Vaibhav Thapliyal	II Year B.Sc. (H) Physics, III Year	for the presence of Mucopolysacc harides by PAS	Prof. Seema Makhija	/zoology/pas/pas.html
34	Swati Shukla Sneha Vaibhav Thapliyal	B.Sc.(H) Electronics II Year B.Sc. (H) Electronics I Year B.Sc. (H) Physics, III Year	To verify Malus Law	Dr Ravneet Kaur Ms. Gauri Ghai	https://www.vlab.andcollege.du.ac.in/phySc/electronics/malus/malusLaw.html
35	Naman Prasad Vaibhav Thapliyal	B.Sc. (H) Electronics II Year B.Sc. (H) Physics, III Year	To determine the value of Boltzmann Constant by studying forward-bias characteristics of a diode	Dr Ravneet Kaur Ms. Gauri Ghai	https://www.vlab.andcollege.du.ac.in/phySc/electronics/boltzmanC/boltzmanF.html
36	Ankush Rana Vishal Gupta Vaibhav	B.Sc. (H) Electronics II Year B.Sc. (H) Electronics I Year B.Sc. (H)	Designing of a First Order Low-pass and High-pass filter using op- amp	Dr Ravneet Kaur Ms. Gauri Ghai	https://www.vlab.andcollege.du.ac.in/phySc/electronics/low_pass_filter/low_pass_filter.html

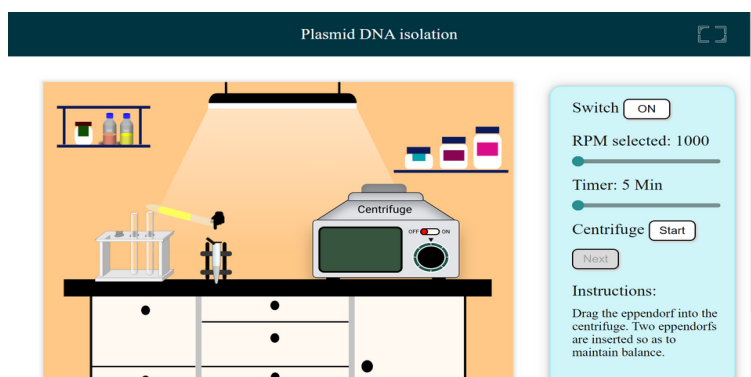
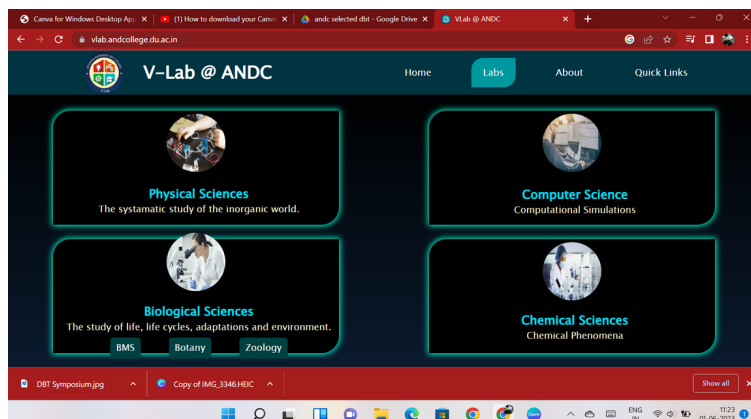
	Thapliyal	Physics III Year			
37	Anubhav Singh and Alok Singh Vaibhav Thapliyal	B.Sc. (H) Electronics II Year B.Sc. (H) Physics III Year	I-V- characteristics of Zener Diode	Dr Ravneet Kaur Ms. Gauri Ghai	https://www.vlab.andcollege.edu.ac.in/phySc/electronics/zener_diode/zener.html

List of tutorial videos created by faculty of Department of Physics as classroom support material

S.No	Title of Video	Contributor (Department)	URL
PHYSICS – 27			
1	Radiation – 1	Dr. Manisha Verma	https://www.youtube.com/watch?v=-inPezsTndw&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=16
2	Radiation – 2	Dr. Manisha Verma	https://www.youtube.com/watch?v=f173OJ4O9a4&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=15
3	Radiation – 3	Dr. Manisha Verma	https://www.youtube.com/watch?v=mjIIZwnu7I0&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=14
4	Radiation – 4	Dr. Manisha Verma	https://www.youtube.com/watch?v=i0klIVKIreo&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=13
5	Thermodynamic Potential – 1	Dr. Manisha Verma	https://www.youtube.com/watch?v=Fp9doCpjEoI&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=26
6	Thermodynamic Potential – 2	Dr. Manisha Verma	https://www.youtube.com/watch?v=LaqFTPbOUIIM&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=25
7	Thermodynamic Potential – 3	Dr. Manisha Verma	https://www.youtube.com/watch?v=oJJyTacAFGM&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=24
8	Thermodynamic Potential – 4	Dr. Manisha Verma	https://www.youtube.com/watch?v=gVI5P7jY3aM&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=23

9	Thermodynamic Potential – 5	Dr. Manisha Verma	https://www.youtube.com/watch?v=tIFG5oboWwU&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=22
10	Thermodynamic Potential – 6	Dr. Manisha Verma	https://www.youtube.com/watch?v=wAKZmJBXXTY&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=21
11	Thermodynamic Potential – 7	Dr. Manisha Verma	https://www.youtube.com/watch?v=w57ReZKz1Io&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=20
12	Thermodynamic Potential – 8	Dr. Manisha Verma	https://www.youtube.com/watch?v=B2Hh1Cqqg0E&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=19
13	Kinetic Theory of gases – 1	Dr. Manisha Verma	https://www.youtube.com/watch?v=na4uQwnEhZY&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=27
14	Kinetic Theory of gases – 2	Dr. Manisha Verma	https://www.youtube.com/watch?v=DqmQKBrc1X0&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=28
15	Kinetic Theory of gases – 3	Dr. Manisha Verma	https://www.youtube.com/watch?v=re5B-2bxU5w&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=29
16	Kinetic Theory of gases – 4	Dr. Manisha Verma	https://www.youtube.com/watch?v=MHJf4UIPXQw&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=30
17	Real Gases – 1	Dr. Manisha Verma	https://www.youtube.com/watch?v=vmkiQDDb91Y&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=52
18	Real Gases – 2	Dr. Manisha Verma	https://www.youtube.com/watch?v=we61qhuEoL0&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=36
19	Real Gases – 3	Dr. Manisha Verma	https://www.youtube.com/watch?v=BQKWjfdUhQ&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=35
20	Real Gases – 4	Dr. Manisha Verma	https://www.youtube.com/watch?v=av-O71z3bPM&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=38
21	Heat Engines	Dr. Manisha Verma	https://www.youtube.com/watch?v=nrHszR961Vc&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=53
22	Shift Registers – 1	Professor Arijit	https://www.youtube.com/watch?v=HbYfMW

		Chowdhuri		GKsYU&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=70
23	Shift Registers – 2	Professor Chowdhuri	Arijit	https://www.youtube.com/watch?v=50iAC2_G00Y&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=69
24	Shift Register (Universal) – 1	Professor Chowdhuri	Arijit	https://www.youtube.com/watch?v=U9Ay5LLgjz4&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=66
25	Shift Register (Universal) – 2	Professor Chowdhuri	Arijit	https://www.youtube.com/watch?v=_KR9jk5rRYw&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=65
26	Counters	Professor Chowdhuri	Arijit	https://www.youtube.com/watch?v=E8FyeRkfdnA&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=58
27	Basics of operational amplifier	Professor Chowdhuri	Arijit	https://www.youtube.com/watch?v=HkG7ujN1kxk&list=PLNspmbLKJ8KeEIxy81OIC-AGIWJAG8gL&index=57



[Signature]
 Co-ordinator
 DOT STAR COLLEGE SCHEME
 Acharya Narendra Dev College
 (University of Delhi)

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 Officiating Principal
 Acharya Narendra Dev College
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 Govindpuri, Kalkaji
 New Delhi-110019

Appendix II

FDP on Sericulture: Rearing and its Applications:

Coordinators: Prof. Seema Makhija:

Co-Cordinators: Prof. Pooja Bhagat, Prof. Geetu Gambhir, Mr. Sanjay Vohra

Organising Team:

Dr Kanchan Srivastava (ARSD), Dr Vandana Kumari Singh (HRC), Dr Vineet K Singh, Dr Aparna Sharma, Dr Sweety Shrimali, Dr SumitSahni, Mr Ashutosh, Mr Devender, Mr Tara Dutt, Mr Promod Bhatt, Mr Sanjeev Kumar, Mr Vikas Sharma, Mr Mahesh Kandpal, Mr Jai Prakash Sharma, Mr Meshram Sagar, Mr Sanjay Sangwan, Mr Tarun Sharma, Mr Harshal, Ms Sumitra Devi

University of Delhi(Skill Enhancement Course Committee)in Collaboration withAcharya Narendra Dev College, University of Delhi(under the aegis of DBT STAR COLLEGE and IQAC)Department of Zoology, University of Delhi, Shaheed Rajguru College of Applied Sciences for Women, University of Delhi, Guru Nanak Angad Dev TLC, SGTB Khalsa College, University of Delhi, Atma Ram Sanatan Dharma College, University of Delhi has organized one week FDP on ‘ Sericulture: Rearing and its Applications’ from August 08, 2023 to August 14, 2023. The aim of the FDP was to enhance the skill of the participants by providing hands-on training and insight knowledge in the field of sericulture.

There were 21 participants who are faculty members in different colleges of Delhi University. Total four sessions were conducted everyday. The schedule of the workshop was as follows:

Day (Date)	Time	Technical Session	Resource Person
Day 1 (August 08, 2023)	10:00 am- 10:30 am	Inauguration Prof. Payal Mago, Chairperson, Skill Enhancement Course Committee, University of Delhi Prof. Rina Chakrabarti, Head, Department of Zoology, University of Delhi Prof. Vimal Rarh, Project Head and Joint Director, GAD-TLC Prof. Sudeshna Mazumdar-Leighton, Chairperson, Governing Body, ANDC Prof. Gyantosh Jha, Principal. Atma Ram Sanatan Dharma College (ARSD), University of Delhi	
	10:30 am- 11:30 am	Sericulture Scenario in India: Introduction	Dr. S. B. Dandin, Director (Rtd), CSB & Ex VC dandinbnm@gmail.com
	11:30 am-	Tea	

	11:45 am		
	11:45 am- 1:00pm	Overview of Sericulture in India	Dr. N. Krishna Kumar Former Director, NBAIR, (ICAR), Bangalore kumarihr@yahoo.com
	1:00 pm- 2:00 pm	Lunch	
	2:00 pm- 3:00pm	Silkworm Rearing, Reeling and its opportunities	Dr R.D. Singh Retd.Joint Secretary Central Silk Board, Ministry of Textile, Govt. of India ripudsingh01@gmail.com
	3:00 pm- 4:00pm	Morphology, Diseases and Pest of Mulberry and its control	Dr Vineet K Singh Assistant Professor, Department of Botany, ANDC vineetkumarsingh@andc.du.ac.in
	4:00 pm- 4:15 pm	Tea	
	4:15 pm- 5:15pm	Visit to Mulberry Farm Raising of Nursery Preparations of Cuttings and Graftings	Mr Sanjay Vohra Instructor, ANDC sanjayvohraandc@gmail.com
Day 2 (August 09, 2023)	10:00 am- 11:30 am	Propagation, Pruning and Cultivation of Mulberry	Dr. Thallapally Mogili Scientist (Rtd) Central Sericultural Research and Training Institute, Mysuru mthallapally@gmail.com
	11:30 am- 11:45 am	Tea	
	11:45 am- 12:45 pm	Basics of Sericulture	Prof V.B. Upadhyay Head, Deptt of Zoology (retd.) DDU Gorakhpur University, Gorakhpur UP v_b_upadhyay@yahoo.co.in (online)
	12:45 am- 1:30 pm	Morphology and life cycle of silk worm, Identification of silkworm species	Dr Kanchan Srivastava, Assistant Professor, ARSD, University of Delhi ksrivastava@arsd.du.ac.in

	1:30 pm- 2:00 pm	Lunch	
	2:00 am- 3:00pm	Disease and Pest of Silkworm and its control	Dr Sarita Kumar Professor, Department of Zoology, ANDC saritakumar@andc.du.ac.in
	3:00 pm- 4:00 pm	Model Rearing House, disinfection of Rearing House and Precautions during Rearing	Dr Kanchan Srivastava, Assistant Professor, ARSD, University of Delhi ksrivastava@arsd.du.ac.in Mr Sanjay Vohra Instructor, ANDC sanjayvohraandc@gmail.com
	4:00 pm- 4:15 pm	Tea	
	4:15 pm- 5:15pm	Silk worm Rearing: Incubation and Black boxing	Dr Kanchan Srivastava, Assistant Professor, ARSD, University of Delhi ksrivastava@arsd.du.ac.in Sanjay Vohra Instructor, ANDC sanjayvohraandc@gmail.com
Day 3 (August 10, 2023)	10:00 am- 11:30 am	Hatching of eggs and Chawki silkworm rearing technique	Dr Sardar Singh Scientist D and Head, RSRS,CSB, Sahaspur, Dehradun rsrsdn@gmail.com
	11:30 am- 11:45 am	Tea	
	11:45 am- 1:00pm	Different Techniques of late age silk worm Rearing	Dr Sardar Singh Scientist D and Head, RSRS,CSB, Sahaspur, Dehradun rsrsdn@gmail.com
	1:00 pm- 2:00 pm	Lunch	
	2:00 pm- 4:00pm	Sericulture as a Start up	Dr Amit Garg Professor, Department of Electronics, ANDC amitgarg@andc.du.ac.in

	4:00 pm- 4:15 pm	Tea	
	4:15 pm- 5:15pm	Post coccon Technology: Sorting and Deflossing	Mr Surinder Bhat, Scientist D, Silk Technical Service Center, CSB, Premnagar, Dehradun dctscddn.uk@gmail.com , sbhatjk@gmail.com , cstricsb.ban@nic.in
Day 4 (August 11, 2023)	10:00 am- 11:30 am	Post coccon Technology: Boiling and Spinning of Silk	Mr Surinder Bhat, Scientist D, Silk Technical Service Center, CSB, Premnagar, Dehradun dctscddn.uk@gmail.com , sbhatjk@gmail.com , cstricsb.ban@nic.in
	11:30 am- 11:45 am	Tea	
	11:45 am- 1:00pm	Moulting, Mounting and Spinning of Silk worm	Dr Sardar Singh Scientist D and Head, RSRS,CSB, Sahaspur, Dehradun rsrsddn@gmail.com
	1:00 pm- 2:00 pm	Lunch	
	2:00 pm- 4:00pm	Silk Testing: Raw silk testing and grading by mechanical tests like winding test, seriplane test and cohesion test.	Mr Surinder Bhat, Scientist D, Silk Technical Service Center, CSB, Premnagar, Dehradun dctscddn.uk@gmail.com sbhatjk@gmail.com , cstricsb.ban@nic.in Dr Pooja Bhagat Associate Professor, Department of Chemistry, ANDC poojabhagat@andc.du.ac.in Mr Sanjay Vohra Instructor, ANDC sanjayvohraandc@gmail.com
	4:00 pm- 4:15 pm	Tea	

	4:15 pm-5:15pm	Enterpreneurship Skills: Psychometric Test and its analysis for students and Role of IPR	Mr Dhruv Rana CEO, ANDC inStart Foundation ceo.aif.work@gmail.com Mr Sanjay Vohra Instructor, ANDC sanjayvohraandc@gmail.com
Day 5 (August 12, 2023)	10:00 am-11:30 am	Extraction and applications of sericin biomolecule	Dr Deepti Gupta, Professor, IIT Delhi deepti@textile.iitd.ernet.in (online)
	11:30 am-11:45 am	Tea	
	11:45 am-1:00pm	Use of Pupae in Livestock Feed and Cosmetics	Dr. Yeruva Thirupathaiah, Scientist-C, CSRTI, Mysuru reddytr@gmail.com
	1:00 pm-2:00 pm	Lunch	
	2:00 pm-4:00pm	Soil sampling and analysis	Dr Pooja Bhagat Associate Professor, Department of Chemistry, ANDC poojabhagat@andc.du.ac.in Ms Swati Maurya, Research Scholar, Ciliate Biology Laboratory, ANDC swatimaurya549@gmail.com
	4:00 pm-4:15 pm	Tea	
	4:15 pm-5:15pm	Idea Generation and Idea Evaluation	Mr. Rajan Luthra Co-Founder and COO, Metvy Mr Sanjay Vohra Instructor, ANDC sanjayvohraandc@gmail.com
	Day 6 (August 13, 2023)	Self Study	
Day 7	10:00 am-	Eri and Muga Sericulture in	Dr. K.M. Vijaya Kumari,

(August 14, 2023)	11:30 am	India	Director, Cmer&Ti, Lahdoigarh, Jorhat, Assam cmertilad.esb@nic.in (online)
	11:30 am-11:45 am	Tea	
	11:45 am-1:00pm	Integrating Tasar cultivation in an ecological restoration process for conservation of Vanya silkworm and development of sustainable livelihood option for local tribal at a degraded mined-out area of Purnapani, Odisha”	Dr. Vivek Kumar Choudhary Scientist Incharge& Field Biologist, Tughlaqabad Biodiversity Park CEMDE, University of Delhi vivekchy007@gmail.com
	1:00 pm-2:00 pm	Lunch	
	2:00 pm-3:00 pm	Biotechnological applications of insect-plant interactions in silkworms	Parul Bhardwaj, SRF, Department of Botany paruljune1991@gmail.com
	3:00 pm-4:00 pm	Roadmap of Sericulture development in State	Mr Sudhir Mohan Sharma, Ex-Director, State Sericulture Department,Uttarakhand sudhir.sericulture@gmail.com
	4:00pm-4:30 pm	Assessment/Assignments	
	4:30 pm	Valedictory/ Feedback	

Hands-on Training Workshop on Phage Biology- Discovery and Analysis and Webinars on Bacteriophage Therapy, held from January 20-25, 2023

Coordinator: Prof. Urmi Bajpai

Acharya Narendra Dev College (ANDC), under the DBT STAR scheme and IQAC, in collaboration with Centre for Innovation in Infectious Disease Research, Education and Training (CIIDRET), and Institute of Eminence-Delhi School of Skill Enhancement and Entrepreneurship Development (IOE-DSEED), and intellectual partner- Society for Bacteriophage Research and Therapy organised "Hands-on Training Workshop on Phage Biology- Discovery and Analysis and Webinars on Bacteriophage Therapy" from January 20-25, 2023. In all, 20 participants including undergraduate and postgraduate and PhD students registered and attended the

workshop. The workshop was designed to impart an understanding of the role of bacteriophages as therapeutics and biocontrol agents and to impart hands-on training in microbiological techniques required for isolation, propagation and characterisation of phage and *in silico* tools used in the analysis of phage genomes.

The inaugural session was held at Acharya Narendra Dev College on 20th January, which also included online talks by Bacteriophage experts from Industry and academia. The organising committee for the inaugural session consisted of Prof. Urmi Bajpai, Dr Satendra Singh and Dr Rimpay Kaur Chowhan, Faculty, Department of Biomedical Science, ANDC; Ms. Ritu and Ms. Kanika, Research Scholars, Department of Biomedical Science and Mr Mitesh Dagar were the resource persons; Ms Swati Maurya, Ms Jyoti Dagar and Mr Sandip Antil, Research Scholars, Department of Zoology, ANDC participated as volunteers. The welcome note was given by Prof. Ravi Toteja, Principal, ANDC. The invited guests present on the day were Prof. Rup Lal, INSA Senior scientist ANDC; Prof. Vijay Kumar Chaudhary, NASI-Senior Scientist and Director Delhi School of Skill Enhancement and Entrepreneurship Development; Prof. Amita Gupta, Professor at the Department of Biochemistry and Director CIIDRET; Prof. Pawan Sharma, Sr. Res. Scientist & Principal Investigator at ICGEB; ANDC faculty members, registered participants and online attendees (about 50). A short introduction to CIIDRET and IoE-DSSEED's initiative of "100 DAYS TRAINING & SKILL ENHANCEMENT FESTIVAL" by Prof. Amita Gupta and Prof. Vijay Chaudhary and Prof Urmi Bajpai apprised the participants on the workshop schedule and moderated the online talks. The inaugural talk on "Phage-encoded lysins as therapeutics" was given by Prof. T.S. Bal Ganesh, President, Gangagen Biotechnologies Pvt. Ltd., India, followed by a talk by Dr Sabrina Green, Research Associate, KU, Leuven University, Belgium on "Finding phages for phage therapy". The inaugural session ended with refreshments and the workshop resumed the next day with a hands-on training at CIIDRET from January 21-22, 2023 and at ANDC from January 23-25, 2023 at ANDC. The participants learned Basic Microbiology Techniques, Media Preparation, Phage titration methods-concept of CFU & PFU, Isolation of bacteriophage from the environment, Plaque Assay & Spot Titer, Methods to enumerate phages, Phage DNA Isolation using PCI Method and Phage genome analysis using Bioinformatics. The workshop was successfully completed and the participants gave a highly positive response and requested for similar such workshops in the future.

National Workshop on "Career and Skill Enhancement for Non-Teaching Staff"

Patron: Prof. Ravi Toteja

Conveners: Dr. Surinder Kaur and Dr. Shalu Mahajan, Department of Commerce

Organizing team: DBT STAR College Coordinators, IQAC coordinator

Department of Commerce at Acharya Narendra Dev College, University of Delhi, orchestrated a seven-day National Workshop on 'Career and Skill Enhancement for Non-teaching Staff' from September 15 to September 21, 2022. The initiative was held under the DBT STAR College Scheme and IQAC, receiving immense support and patronage from Prof. Ravi Toteja, the acting


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New Delhi-110019

Principal of the college. Dr. Surinder Kaur and Dr. Shalu Mahajan from the Department of Commerce served as the esteemed conveners for the workshop. A dedicated organizing team, comprised of DBT STAR College Coordinators, IQAC coordinator, department members, and non-teaching staff, ensured the seamless execution and success of the workshop.

The inaugural session transpired on September 15, 2022, at the college's seminar hall. Dr. Surinder Kaur extended a warm welcome to the guests, chief guest, principal, and all the participants, introducing the workshop's theme and elucidating its significance and objectives. Prof. Toteja, the Officiating Principal, graced the occasion with a welcome address, shedding light on the growing importance of digitalization and financial and administrative skills in enhancing the careers of non-teaching staff in educational institutions. He extended a gracious welcome to the Chief Guest, Senior Professor (Dr.) Ajay Kumar Singh, Head and Dean of the Faculty of Commerce and Business at the Delhi School of Economics, University of Delhi. Prof. Ajay Kumar Singh delivered a keynote address, emphasizing the vital role played by non-teaching staff in the effective functioning and development of colleges. He highlighted the significance of aligning one's behavior with prevailing cultural norms and commended the college for organizing such an insightful workshop. The workshop encompassed a diverse array of topics, ranging from utilizing various digital platforms to understanding the fundamentals of Word, Spreadsheets, PowerPoint, financial planning, E-filing of ITR, and more.

The workshop received an overwhelming response from non-teaching staff across various colleges of the University of Delhi and other institutions. Registrations were limited to 50 participants to ensure the effectiveness of hands-on sessions. The workshop successfully conducted a total of 22 sessions, covering a wide range of subjects. Renowned speakers, including Mr. Sikandar Aggarwal, Ms. Meenakshi Sahay, Mr. Sandeep Sharma, Mr. JatinLamba, Dr. Jamaluddeen, and Mr. Gurjinder Singh, along with senior staff members of the college, delivered sessions covering essential topics such as leave rules, promotion rules, procurement and general finance rules, and online purchases through the GeM portal. Additionally, trips to the college library and laboratories were organized. Participants were also trained in income tax return filing, document preparation using MS Word and Excel for seamless record keeping, and scheduling and hosting online meetings via Google Meet and Zoom platforms. Representatives from Punjab National Bank shared insights into the methods fraudsters employ in online transactions, imparting knowledge to distinguish between genuine and fraudulent messages from banks and other websites.

The participants exhibited high motivation and enthusiasm in learning new skills throughout the workshop, as evident from their regular attendance, active participation in Q&A sessions, and positive demeanor. Their assessments and feedback were gathered at the conclusion of the workshop.


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The valedictory session, held on September 21, 2022, featured a closing speech by Dr. Shalu Mahajan. Prof. Ravi Toteja, the Officiating Principal, presided over the session, and Professor Ashutosh Bhardwaj, Founding OSD of the Institute of Eminence and Professor in the Department of Physics and Astrophysics at the University of Delhi, was the esteemed chief guest. Prof. Bhardwaj underscored the importance of lifelong learning and the enthusiasm for acquiring new knowledge to enhance one's career

National workshop on Skill enhancement of Non-teaching staff (NWSSENS-2022)

Conveners: **Prof Seema Makhija and Dr Archna Pandey**

Date: **July 13-20, 2022**

Number of Participants: **54**

In commemoration of centenary celebrations of the University of Delhi, Acharya Narendra Dev College under patronage of its Principal, Prof. Ravi Toteja and Convenors, Prof. Seema Makhija (Department of Zoology) and Dr Archna Pandey (Department of Biomedical Science), organized a National workshop on Skill enhancement of Non-teaching Staff (NWSSENS-2022) from July 13-20, 2022. The workshop was organized under the aegis of Internal Quality Assurance cell and DBT Star College scheme of Acharya Narendra Dev College, and gracious support of Chief Guest, Prof. Shri Prakash Singh, Director, South Campus, University of Delhi and Guest of Honour, Mr. Anil Saini, Chairman, Governing Body, Acharya Narendra Dev College. The workshop began with inaugural ceremony attended by Prof. Shri Prakash Singh, Director, South Campus, University of Delhi. More than 60 non-teaching staff from various colleges of University of Delhi including Institute of Home economics, Lady Irwin college, Ramjas College, etc. participated in the workshop. The workshop was designed for holistic development of the non-teaching staff, and covered topics like financial management, tax-filing, stock-keeping, computational skills, operation of GeM portal, basic laboratory skills for safe handling and usage of scientific equipments ranging from pH meters, electrophoresis units, centrifuges, micro-pipettes, microscopes and spectrophotometers. Shri Girish Ranjan, Finance Officer, University of Delhi; ACP Harmeet Singh Randhawa, IFSO/Cyber Crime Unit Special Cell; Dr Ram Kumar, Professor of Environmental Science, School of Earth Biological and Environmental Sciences, Central University of South Bihar; Jai Kumar Gaurav, Senior Advisor Climate change and Circular Economy, GIZ; Dr Vijay Pal Singh, Assistant Professor and STO, IGIB, Dr Daya Bhardwaj, Associate Professor, Department of Chemistry, Rajguru College of Applied Sciences for Women, University of Delhi were among the several eminent speakers that joined our workshop to deliver talk and train the non-teaching staff.


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Appendix III

Awards/ Accolades/Publications of students

Fellowships Received by ANDC Students from External Sources

Meritorious Students' Award from Government of Delhi

The Directorate of Higher Education, Government of NCT of Delhi rewards the toppers from Delhi Government funded colleges of University of Delhi. The amount of this fellowship is Rs. 10,000/- (Rupees Ten Thousand only) and all ANDC students are eligible for this. This Year, the fellowship is awarded to the following students:

S. No.	Name of the student	Course, Year	Amount (Rs.)
1.	Jyoti Sharma	B. Sc. (P) Life Sciences, III Year	10,000/-
2.	Anamta Islam	B. Sc. (H) Electronics, III Year	10,000/-
3.	Pushkar Baranwal	B. Sc. (H) Electronics, III Year	10,000/-
4.	Gurpreet Kaur	B. Sc. (H) Maths, III Year	10,000/-
5.	Priyanshi Gupta	B. Sc. (H) Maths, III Year	10,000/-
6.	Pulkit Narayan Pandey	B. Sc. (H) Maths, III Year	10,000/-

7.	Pushkar Pandey	B. Sc. (H) Maths, III Year	10,000/-
8.	Somiya Kapoor	B. Sc. (H) Maths, III Year	10,000/-
9.	Sukanta Sarkar	B. Sc. (H) Maths, III Year	10,000/-
10.	Sunidhi Khanna	B. Sc. (H) Maths, III Year	10,000/-

Hindustan Petroleum Corporation Limited Scholarship

Hindustan Petroleum Corporation Limited is Maharatna Company under MoPNG, Govt. of India. HPCL has always believed in creating shared values and delivering happiness through its various initiatives that have touched millions of lives. In the continued endeavor, HPCL wishes to distribute scholarships to SC/ST/OBC and PWD students studying in graduation and post graduation courses.

The current scholarship scheme of HPCL for Students in the category of Scheduled Caste, Scheduled Tribes, Other Backward Classes and Persons with Disabilities gives support for their education. This year, the award is given to the following students:

S. No.	Name of Student
1	Abhishek
2	Abhishek Kumar
3	Aditya
4	Aditya Kumar
5	Aditya Kumar Singh
6	Aditya Raj Sah
7	Akanchha Kumari
8	Alka Raju
9	Alok Singh
10	Alshad S
11	Aman Kumar
12	Amarjeet Kumar
13	Amit Rathore
14	Anshu
15	Ashwani Kumar
16	Ayush Chaudhary
17	Bhawna Kumari
18	Chandan Kumar
19	Chandan Kumar Shah
20	Deepak Jaswal
21	Devang Kamal
22	Devansh Panwar

23	Dhananjay Kumar
24	Gulshan Kumar
25	Gyan Prakash
26	Himanshi Nagar
27	Jagdeesh Arya
28	Jitender
29	Keshav
30	Kirti Yadav
31	Krishna Agrawal
32	Lalit Kumar
33	Manish Verma
34	Mohd Tabish
35	Monu
36	Nishant Kumar
37	Pallavi Saini
38	Payal
39	Pranjal Verma
40	Prashant Kumar
41	Prayag Yadav
42	Rakhi
43	Ravi Tomer
44	Rishipal
45	Riya Verma
46	Rohit
47	Rohit Maurya
48	Roshan Kumar
49	Sarita
50	Sumit
51	Tripti
52	Vinod
53	Vipin Kumar
54	Vishal Gupta
55	Vishal Kashyap
56	Yadvender
57	Yash Kumar

Meritorious Students' Award from University of Delhi

Faculty of Science, University of Delhi rewards the meritorious students who are pursuing science courses from colleges of University of Delhi. The amount of this award given is Rs. 3,000/- (Rupees Three Thousand only) which is to be used by the student for the purchase of books. This year, the award is given to the following seven students:

S. No.	Name of the student	Course, Year
1	Prince CP	B. Sc. (H) Physics, I Year
2	Amal Joshi	B. Sc. (H) Chemistry, I Year
3	Somsuvra Das	B. Sc. (H) Physics, III Year
4	Bindu	B. Sc. (H) Physics, III Year
5	Mohini Kumari	B. Sc. (H) Botany, III Year
6	Radhika Garg	B. Sc. (H) Zoology, III Year
7	Khushi Goyal	B. Sc. (H) Zoology, III Year

UG Student Publication

Chemistry

1. S. Pasricha, K. Mittal, P. Gahlot, H. Kaur, N. Avasthi and Shweta Multicomponent Synthetic Strategies and Perspectives for Synthesis of Linked or Fused Coumarin Heterocycles: A review, *J. Iranian Chemical Society*, 2022, doi.org/ 10.1007/s13738-022-02603-x.

Electronics

1. Ghai, G., **Raj, R.** and Kaur, R. (2022) An Inclusive Science Laboratory for Visually Impaired Students. *Journal of Engineering Education and Transformations*. 36(2): 87-100.
2. Gaur,V., **Yadav, R.**, and Kaur, R. (2023) A Quantitative Approach to Prioritize Causes of Air Pollution in Delhi. *Indian Journal of Environmental Protection (IJEP)*- In press.
3. **Rana, A, Bhatnagar, S.**, Garg, S. and Garg, A. (2023) A pedagogical approach to wavelength division multiplexing measurements using 3D printing and Arduino. *Physics Education*. 38(6).
4. Gaur,V., **Sinha, A.** and Kaur, R. (2023). An Intelligent Covid Management System for Pre Schools. In: Mishra, A., Gupta, D., Chetty, G. (eds) *Advances in IoT and Security with Computational Intelligence*. ICAISA 2023. Lecture Notes in Networks and Systems, vol 755. Springer, Singapore. https://doi.org/10.1007/978-981-99-5085-0_25.
5. **Jha, A.**, Gaire,P., Kaur, R. and Bhattacharya, M. (2023) IoT Based Smart Drainage System. In: Mishra, A., Gupta, D., Chetty, G. (eds) *Advances in IoT and Security with Computational Intelligence*. ICAISA 2023. Lecture Notes in Networks and Systems, vol 755. Springer, Singapore. https://doi.org/10.1007/978-981-99-5085-0_23

Zoology

2. **Jain, R., Aryama, P., Chauhan, B., Misra, M.* and Saxena, T.** (2022) Impact of Climatic Change on Respiratory Health *International Journal of Zoological Investigations* , 8 (2) 973-982 (2022)
3. **Sharma, S., Pranav, Shivam, Rana, N., Vashishtha, K., Chauhan, B., Misra, M* and Sharma, B.** (2022) Post COVID-19 Long Term Effects Persisting More Than 6 Months in Various AgeGroups of Indian Population. *International Journal of Zoologi Investigations*, 8(2), 674-680(2022).

UG student Conference Presentation (2022-2023)

1. **Harshelle Bhatt, Himanshi Jain, Hiya Prasad**, presented Antibacterial study of chemically synthesized Titanium Dioxide and ginger extract mediated Copper Nanoparticles in 23rd Annual convention on Translating Human Evolutionary History to Precision Medicine at Banaras Hindu University from March 10-12, 2023.
2. **Gummadi Shyam Kumar**, presented Rural marketing and consumer behavior in One day International Conference on ‘One Earth. One Family. One Future organised by the Department of Commerce, ANDC and Department College Interface, Delhi School of Economics in collaboration with Indian Commerce Association (ICA) Delhi NCR Chapter on April 03, 2023,
3. **Bipasa Arya, Abhijit Roy**, Drashya Gautam, Laishram Saya, Dinesh Kumar Arya, Geetu Ghambhir, Sunita Hooda, Hydrothermal Synthesis of Magnetic Nanoparticles and their UV-Visible Analysis, A-014 in International Conference on Nanotechnology: Opportunities and Challenges(ICNOC 2022),organized by Department of Applies Sciences & Humanities, Faculty of Engineering & Technology, Jamia Millia Islamia, New Delhi, India, P-104, Nov. 28-30, 2022.
4. **Yashank, Akshat**, Drashya Gautam, Laishram Saya, Geetu Ghambhir, Sunita Hooda, presented Magnetised Nanocomposite of Graphene Oxide /Ground Nut Husk/Guar gum for adsorption of reactive Green 19, A-027 in International Conference on Nanotechnology: Opportunities and Challenges(ICNOC 2022),organized by Department of Applies Sciences & Humanities, Faculty of Engineering & Technology, Jamia Millia Islamia, New Delhi, India, P-115 Nov. 28-30, 2022.
5. **Puneet Chauhan, Soven Kumar Samal**, Drashya Gautam, Laishram Saya, Sunita Hooda, Geetu Ghambhir, presented Synthesis & analysis of Tamarind Kernal- Coated Magnetic Iron Oxide Nanoparticles A-123, International Conference on Nanotechnology: Opportunities and Challenges(ICNOC 2022) in Department of Applies Sciences & Humanities, Faculty of Engineering & Technology, Jamia Millia Islamia, New Delhi, India, P-213, Nov. 28-30, 2022.
6. **Eniya, Geni**, Drashya Gautam, Laishram Saaya, Geetu Ghambhir, Sunita Hooda, presented Investigative Study of Magnetised Groundnut Husk for the Adsorptive Removal of Rhodamine 6G Dye from Aqueous Solution, C-065 in International

Conference on Nanotechnology: Opportunities and Challenges(ICNOC 2022),organized by Department of Applied Sciences & Humanities, Faculty of Engineering & Technology, Jamia Millia Islamia, New Delhi, India, P-586, Nov. 28-30, 2022.

7. **Meghana Bisht , Ayushi Gupta , Tanya Chopra**, Pooja Bhagat, Seema Makhija, Rahul Dev and Ravi Toteja, A Pilot Project to assess the soil quality. Poster presentation in an International conference 44thAll India Cell Biology Conference& International Symposium on Molecular and Cellular Insights of Human Diseases, University of Kashmir on September 02-03, 2022.
8. **Sruthi S. Kumar, Jay Kumar Sirmoria**, Arijit Chowdhuri and Charu Khosla Gupta Oral Presentation on “Estimation of particulate matter exposure experienced by an undergraduate student in Delhi on a daily basis” –, 2nd Int’l Conference on Advanced Functional Materials and Devices (AFMD-2023), 13 – 15 March 2023, organized by Atma Ram Sanatan Dharma College (University of Delhi) Dhaula Kuan, New Delhi – 110 021, INDIA pp 162
9. **Kumar S. S., Sirmoria J. K.**, Mangla Y., Chowdhuri A. and Gupta C. K., (2022). Oral Presentation on “Air Pollution Tolerance Index (APTI) – a tool to measure pollution tolerance in some native trees of Delhi” – 7th Annual International Conference of Indian Network for Soil Contamination Research (INSCR), 7 – 11 November 2022 pp 159.
10. **Vashista, S.** Ghai, G., Agrawal, A. and Kaur, R. (2022) Bluetooth Beacons: Location based Geofence for crowd management. 7 th International Conference of Indian Network for Soil Contamination Research (INSCR) “Modulating the Environment with Microbes” from 08-11 November 2022.
11. Ghai, G., **Vashista,S.** Agrawal, A. and Kaur, R. (2022) A Novel Architecture of Ultra-Thin Body Silicon On Insulator (UTB SOI) MOSFET for Biomolecular Sensing Application. 7 th International Conference of Indian Network for Soil Contamination Research (INSCR) “Modulating the Environment with Microbes” from 08-11 November 2022.

DBT Star grant helping UG students garner scholarships for PG Students abroad

1. **Ms. Himanshi Jain** (2020-23) batch of B.Sc. (H) Biomedical Science has garnered scholarship to pursue research master's program in Molecular Mechanisms of Disease (research) from Radbound University, Netherlands.
2. **Ms. Mansi Arora** (2018-21) batch of B.Sc. (H) Biomedical Science has garnered scholarship in 2023 to pursue Global MBA (double degree) from International University of Applied Sciences, Berlin, Germany and London South Bank University, London, United Kingdom.
3. **Ms. Sharika Mattoo** (2020-23) batch of B.Sc. (H) Biomedical Science has garnered scholarship to pursue Postgraduation from School of Biological Sciences, University of Manchester, United Kingdom.
4. **Ms. Varnika Agarwal** (2020 – 23) batch of B.Sc. (H) Physics has garnered Erasmus Mundus fellowship for Joint Master degree on Nuclear Physics wherein she will pursue

her 1 & 2nd semesters in University of Seville, SPAIN, 3rd semester in Caen Normandy University, FRANCE, and 4th semester in University of Padua, ITALY

5. **Mr. Kalpajit Roy** (2020 – 23) batch of B.Sc. (H) Physics has garnered Erasmus Mundus fellowship for Joint Master degree on Nanoscience and Nanotechnology wherein his 1st year is in KU Leuven, BELGIUM and 2nd year in UGA Grenoble, FRANCE (specialisation in quantum and nanoscale engineering)
6. **Mr. Prahlad Sharma** (2020 – 23) batch of B.Sc. (H) Physics has garnered scholarship to pursue Masters in Nanotechnology, Sapienza University of Rome, ITALY. He also got full scholarship to join Masters in Physics (specialization in Condensed Matter Physics), University of Messina, ITALY
7. **Mr. Prashant Verma** (2020 – 23) batch of B.Sc. (H) Physics has garnered scholarship to pursue Masters in Physics (specialization in Condensed Matter Physics), University of Messina, ITALY.
8. **Mr. Ankush Rana** (2020 – 23) batch of B.Sc. (H) Electronics has garnered DSU (Diritto allo Studio Universitario) scholarship to pursue M.Sc. Electronics Engineering, Polytechnic University of Milan, Italy.
9. **Ms Sunidhi Aneja** (2018 – 21) batch of B.Sc. (H) Zoology is pursuing her Masters in Integrated Plant and Animal Breeding from Georg August Universität, Göttingen, Germany.
10. **Ms Komal** (2018 – 21) batch of B.Sc. (H) Zoology is pursuing her Masters from Rheinische Friedrich-Wilhelms-Universität Bonn (or in short, University of Bonn).
11. **Mr Mukund** (2018 – 21) batch of B.Sc. (H) Zoology is pursuing his Masters in Ecology and Environmental change, Bielefeld University.
12. **Mr Madhav** (2018 – 21) batch of B.Sc. (H) Zoology is pursuing his Masters in Masters in Ecology, Evolution and Systematics, Ludwig Maximilian Universität, Munich

UG Dissertation

The following two students did their final year projects in 3D printing under the supervision of Professor Amit Garg:

- (1) Ankush Rana
- (2) Shivansh Bhatnagar

UG Research Awarded @ National and International Platform

1. Vridhi Singh: Best Oral presentation in the ICSSR sponsored International Seminar on ‘Technology for Environmental Sustainability, Socio-Economic Responsibility and Associated Entrepreneurial Opportunities in Society and Rural Environment’, organized by Sri Aurobindo College, University of Delhi on 16th-17th March 2023.
2. Mohd. Afham: Best Oral presentation in the ICSSR sponsored International Seminar on ‘Technology for Environmental Sustainability, Socio-Economic Responsibility and Associated Entrepreneurial Opportunities in Society and Rural Environment’, organized by Sri Aurobindo College, University of Delhi on 16th-17th March 2023

3. Subhanshu Krishna: First Prize in Paper presentation at the Samara' 23 the Annual Fest organized by Bloom-The botanical society of Ramjas College, University of Delhi
4. Subhanshu Krishna, Mohd.Afham and Vridhi Singh: First prize in Botanophily, the paper presentation competition at Inflorescence' 2023 organized by Sanjeevani, the botanical society of Hindu College, University of Delhi on 5th April 2023.

Awards won in extra-curricular Activities

1. Aakanksha Rathee, B. Sc. (H) Biomedical Science, I Year Secured third position in an Inter-college Speech competition "Can India get corruption free?" organised by Unnat Bharat Abhiyan@ANDC on November 06, 2023.
2. Saarthak Kumar, B. Sc. (H) Biomedical Science, II Year Won third prize in the quiz competition organized on the occasion of National Science Day by National Institute of Immunology on February 28, 2023.
3. Ms Harshita Kushwaha, B.Sc. (H) Zoology II Year, won MicroQuiz in Microspher 2.0 held on occasion of International Microorganisms Day on September 17, 2022 under the aegis of IMiLI, INSCR, FEMS & ISME.
4. Ms Anshika Sharma, B.Sc. (H) Zoology II Year, 2nd Prize in Hindi Quiz Competition Organized on Hindi Diwas September 17, 2022 by IIT BHU.
5. Ms Harshita Khushwaha, B.Sc. (H) Zoology II Year, Resource person for One-week Revisit Bootcamp 1.1 for V-Lab Development from January 09-14, 2023.

Training Programs/Internships attended by the students

1. Dev Pravin Rathod, Gummadi Shyam Kumar, Simran Kumari, Ujjwal Kumar, B. Sc. (H) Biomedical Science, I Year participated in Training Programme of Palliative care for Volunteers conducted by Dharamshila Rahat Medical Centre, Delhi on March 25, 2023.
2. Gummadi Shyam Kumar, B. Sc. (H) Biomedical Science, I Year, secured Content Writing internship at Marpu Foundation through Internshala on May 26, 2023
2. Anagha M P, B. Sc. (H) Biomedical Science, II Year completed one month internship training in Microbiology department of PK Das Institute of Medical Sciences, Kerala from June 19, 2023 to July 18, 2023
3. Anshika Bansal, Arpit Sharma, Jasman Singh, Preksha, Sonam Soni, Saarthak Kumar, Suprobh Ahna Borah, Tamanna Saini, Tushar Pathak, B. Sc. (H) Biomedical Science, II Year completed a 60 hours value added course in Tools and Techniques in Biological Sciences conducted by Prime Minister's Research Fellow Scholars from IIT Delhi at Acharya Narendra Dev College.Date
4. Arpit Sharma, B. Sc. (H) Biomedical Science, II Year completed a short term training program on the project entitled "A comparative analysis of ARG databases and search tools for searching ARGs using NGS data" under the supervision of Dr. Amit Kumar

Yadav, Senior Research Scientist, Translational Health Science and Technology Institute (THSTI), Faridabad from June 01, 2023 to July 31, 2023.

5. Asmita Nayak, B. Sc. (H) Biomedical Science, II Year completed a short term training program on the project entitled "Experimental training for basic laboratory skills" under the supervision of Dr. Krishnamohan Atmakuri, Associate Professor, Translational Health Science and Technology Institute (THSTI), Faridabad from June 01, 2023 to July 31, 2023.
6. Asmita Nayak, B. Sc. (H) Biomedical Science, II Year completed the Vice Chancellor Internship Scheme as a part-time Intern at the Department of Chemistry for six months from December 2022 till June 2023.
7. Saarthak Kumar, B. Sc. (H) Biomedical Science, II Year worked as trainee in the research lab of Prof. B.K. Thelma, Department of Genetics, UDSC for four months from January 14, 2023 to April 14, 2023.
8. Saarthak Kumar, B. Sc. (H) Biomedical Science, II Year completed the Vice Chancellor Internship Scheme as a part-time Intern at the Faculty of Science (Admin and Accounts) for six months from December 2022 till June 2023.
9. Suprobh Ahna Borah, B. Sc. (H) Biomedical Science, II Year, completed the Vice Chancellor Internship Scheme as a part-time Intern under International Biosafety Committee (IBSC), UDSC for six months from December 2022 till June 2023.
10. Suprobh Ahna Borah, B. Sc. (H) Biomedical Science, II Year, participated in IP awareness/training program under National Intellectual Property Awareness Mission organised by Intellectual Property Office, India on August 27, 2022
11. Suprobh Ahna Borah, Tamanna Saini, Tushar Pathak, B. Sc. (H) Biomedical Science, II Year participated in IP awareness/training program under National Intellectual Property Awareness Mission organised by Intellectual Property Office, India on August 27, 2022
12. Tamanna Saini, B. Sc. (H) Biomedical Science, II Year, completed a short term training program on the project entitled "Cloning, protein expression and purification of prophage Lysin B" under the supervision of Dr. Ramandeep Singh, Professor, Translational Health Science and Technology Institute (THSTI), Faridabad from June 01, 2023 to July 31, 2023.
13. Tushar Pathak, B. Sc. (H) Biomedical Science, II Year, participated in a collaborative online training program on 'Entrepreneurship Development for Youth' jointly organised by ICAR- Indian Agricultural Research Institute, Delhi and Manage Hyderabad from March 14-16, 2023
14. Tushar Pathak, B. Sc. (H) Biomedical Science, II Year, Completed the course on 'Digital Productivity (Proficiency in Microsoft Word, Excel and Powerpoint)' organised by YuWaah, Youth Development and Partnerships, UNICEF during January 2023
15. Ajay Kumar Singhmar, B. Sc. (H) Biomedical Science, III Year, completed the 'Inter-College Summer Training Program on Green Fabrication of Silver Nanoparticles and its

Antibacterial Efficacy' organised by the Department of Biochemistry, Shivaji College, University of Delhi from June 09 to July 08, 2022.

16. Mr Abhay Gupta, B.Sc. (H) Zoology II Year, Completed internship titled "Techniques on Collection, Preservation and Identification of Insects" at Zoological Survey of India, Northern Regional Centre, Dehradun from June 05 to July 14, 2023.
17. Mr Dhruv Bhasin, B.Sc. (H) Zoology II Year, Completed internship titled "Techniques on Collection, Preservation and Identification of Insects" at Zoological Survey of India, Northern Regional Centre, Dehradun from June 05 to July 14, 2023.
18. Ms Manya Batra, B.Sc. (H) Zoology I Year Completed two months Internship as Human Resources Associate Intern in **Begin** from November 2022 to January 2023.
19. Ms Manya Batra, B.Sc. (H) Zoology I Year, Completed one year Internship with BookWithUVA supported by ELab @ANDC.

Participation by Students in Various Conferences/Workshops

1. Aakanksha Rathee, B. Sc. (H) Biomedical Science, I Year participated as a Delegate in Youth Speak Forum'23 conducted by AIESEC at IIT Delhi on April 30, 2023.
2. Aakanksha Rathee, Dev Pravin Rathod, Shalini Verma, Ujjwal Kumar, Anagha B. Sc. (H) Biomedical Science, I Year, Anshika Bansal, Arpit Sharma, Asmita Nayak, Saarthak Kumar, Suprobh Ahna Borah, Sonam Soni, Tamanna Saini, Tushar Pathak, II Year
3. Participated in One Day Hands on Workshop on Forensic Science workshop organised by Department of Biomedical Science, ANDC on April 12, 2023.
4. Alia Siddiqui, Dev Pravin Rathod, B. Sc. (H) Biomedical Science, I Year participated in a one day workshop entitled 'Hologram recording and Reconstruction' organized by SPIE Student Chapter, University of Delhi at ANDC on February 04, 2023
5. Alia Siddiqui, B. Sc. (H) Biomedical Science, I Year participated in a one day workshop on "Arduino & Sensor Interfacing" organized by SPIE Student Chapter, University of Delhi at ANDC on January 28, 2023.
6. Alia Siddiqui, B. Sc. (H) Biomedical Science, I Year participated in the event 'Bliss' during Kashiyaatra'23, the annual socio-cultural festival of IIT (BHU) Varanasi, held from January 20-22, 2023.
7. Anagha M P, Ankita Malakar, B. Sc. (H) Biomedical Science, II & III Year, respectively, participated in 'Hands on workshop on PCR and Real Time PCR techniques organized by BIONEST, UDSC July 11-12, 2022.
8. Anshika Bansal, B. Sc. (H) Biomedical Science, II Year participated in One Day Workshop on "Roadmap for Patent Creation" organised by the Translational Health Science and Technology Institute (THSTI) in collaboration with Cell for IPR Promotion and Management (CIPAM), Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry, Government of India on August 22, 2022.
9. Arpit Sharma, Asmita Nayak, Tushar Pathak, B. Sc. (H) Biomedical Science, II Year attended International Symposium on 'Chronobiology and Mental Health' organized by

the Department of Biochemistry, Institute of Home economics, University of Delhi from March 6-7, 2023.

10. Arpit Sharma, Asmita Nayak, Jasman Singh, Saarthak Kumar, Suprobh Ahna Borah, Tamanna Saini, B. Sc. (H) Biomedical Science, II Year attended the lecture series on 'Bacterial pathogenesis : The Role of Stress' held at Multidisciplinary Centre for Advanced Research and Studies (MCARS) on February 16, 2023
11. Saarthak Kumar, Suprobh Ahna Borah, B. Sc. (H) Biomedical Science, II Year appeared for Mimamsa 2023 Prelims organized by IISER, Pune on January 29, 2023.
12. Saarthak Kumar, Suprobh Ahna Borah, B. Sc. (H) Biomedical Science, II Year participated in one day workshop 'Animal Welfare Progress in India' organised by CSIR-IGIB, Delhi on January 28, 2023
13. Saarthak Kumar, Suprobh Ahna Borah, B. Sc. (H) Biomedical Science, II Year participated in National Symposium on Frontiers in Biomedical Research (FBR) 2022 organized by ACBR, University of Delhi from November 2-4, 2022.
14. Saarthak Kumar, Tamanna Saini, Tushar Pathak, Ajay Kumar Singhmar, B. Sc. (H) Biomedical Science, II Year participated in One Day Workshop on "Roadmap for Patent Creation" organised by the Translational Health Science and Technology Institute (THSTI) in collaboration with Cell for IPR Promotion and Management (CIPAM), Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry, Government of India on August 22, 2022.
15. Suprobh Ahna Borah, B. Sc. (H) Biomedical Science, II Year attended Episode 1 of ISCB RSG India's Meet the Bioinformatician (MTB) series organised by Department of Biophysics, University of Delhi on March 27, 2023.
Suprobh Ahna Borah, B. Sc. (H) Biomedical Science, II Year attended one day symposium on Metabolic Associated Fatty Liver Disease organized by THSTI, Faridabad on June 25, 2022.
16. Mr Abhay Gupta, B.Sc. (H) Zoology II Year, Participated in '**Canva Workshop**' under '**Ace the Skill**' week organized by BODHINI-AERC from February 04-06, 2022.
17. Mr Dhruv Bhasin, B.Sc. (H) Zoology II Year, Attended One day workshop on **Quantitative microbial ecology: Opportunities and Way-ahead** held at ANDC organized in association with Gargi College, UoD; IMiLI-SAC & PhixGen Pvt. Ltd.
18. Ms Anshika Sharma, B.Sc. (H) Zoology II Year, Attended One day workshop on **Quantitative microbial ecology: Opportunities and Way-ahead** held at ANDC organized in association with Gargi College, UoD; IMiLI-SAC & PhixGen Pvt. Ltd.
19. Manya Batra, B.Sc. (H) Zoology I Year Successfully Completed **Training in Self Defence Techniques** organized by Special Police Unit for Women and children held at ANDC from November 21-30, 2022.
20. Mr Abhay Gupta, B.Sc. (H) Zoology II Year, Mr Dhruv Bhasin, B.Sc. (H) Zoology II Year, Attended **Microsphere 2.0** held on occasion of International Microorganisms Day on September 17, 2022 under the aegis of IMiLI, INSCR, FEMS & ISME.

21. Ms Manya Batra , BSc (H) Zoology I Year, Attended Workshop Kraftshala Liveon Digital Marketing and content (From Fresher to CEO) organized by Varun Setia founder CEO Kraftshala .
22. Ms Harshita Khushwaha, B.Sc. (H) Zoology II Year, Participated in Photography competition organized by Department of Zoology, Shivaji College.
23. Ms Anshika Sharma, B.Sc. (H) Zoology II Year, Participated in कहानी वाचन प्रतियोगिता organized by IIT BHU on Hindi Diwas September 17, 2022.
24. Ms Anshika Sharma, B.Sc. (H) Zoology II Year Participated in आशुभाषण प्रतियोगिता organized by IIT BHU on Hindi Diwas September 17, 2022.
25. Ms Anshika Sharma, B.Sc. (H) Zoology II Year Participated in रचनात्मक लेखन प्रतियोगिता organized by IIT BHU on Hindi Diwas September 17, 2022.

Appendix IV

This year College organized **Two International Conferences**

Title: **3rd International Symposium on Ciliate Biology (ISCB 2022)**

Organizers: INSCR, ANDC and Maitreyi College

Date: November 08, 2022

Number of Participants: 54

As part of the Centenary Celebrations, Acharya Narendra Dev College and Maitreyi College collaborated with INSCR (Indian Network for Soil Contamination Research) to host the 3rd International Symposium on Ciliate Biology 2022 (ISCB 2022) on November 08, 2022. Thirteen highly regarded international speakers presented their research findings, and a plenary talk was delivered by Professor Gaytha, an esteemed expert in Environment Policy at Bryant University, Rhode Island, USA. Notable figures like Prof. Cristina Micelli, Prof. Alexey, Prof. Fokin, and Dr. Alan Warren were among the eminent speakers. The event also provided a platform for undergraduate and postgraduate students, as well as research scholars, to showcase their research work through oral and poster presentations. A significant highlight of the conference was the conferral of the Lifetime Achievement Award upon Prof. G.R. Sapra, recognizing his exceptional contributions to Ciliate Biology. The symposium encompassed various themes such as Biodiversity, Ecology, Evolution, Systematics, Genomics, Epigenetics, DNA Barcoding, Proteomics, and Bacterial Symbionts in Ciliates. Registration for the symposium was open to undergraduates, postgraduates, research scholars, post-doctoral fellows, and faculty members, attracting over 50 participants from diverse national and international academic institutions. To encourage undergraduate student participation, registration costs were subsidized. Students or emerging scholars accounted for approximately one-quarter of the participants.

The symposium aims to achieve the following –

- To provide a platform for the ciliate interest group to exchange information, present the latest research findings, and establish collaborations
- To enthuse a large number of Indian and foreign undergraduate and postgraduate students to take up ciliated protists as their preferred research area
- To provide networking opportunities for students wishing to take up doctoral or postdoctoral research on ciliates

Prof. Ravi Toteja, officiating Principal of the College concluded the 3rd International Symposium on Ciliate Biology by thanking the delegates and the presenters for their participation. Prof. Ravi Toteja also thanked the organizing committee for the successful completion of the Symposium.

Keynote and Invited Speakers:

Name of Speaker	Affiliation	Title of Talk
Prof Cristina Miceli	School of Biosciences and Veterinary Medicine University of Camerino via Gentile III da Varano 62032 Camerino (MC) ITALY	Ciliate as sensors for environmental stresses
Prof Bettina Sonntag	University of Innsbruck Research Department for Limnology, Mondsee, Austria	Identification of Planktonic Freshwater Ciliates and their Key Roles in Aquatic Environments
Prof Alexey Potekhin	Department of Microbiology, Faculty of Biology, St Petersburg	Diversity and Dynamics of Microbiomes associated with Freshwater Ciliates
Prof. Sergey Fokin	Department of Biology, Università, di Pisa, UNIPI	Ciliates and its symbionts from ecological point of view
Prof. Gaytha Langlois	Professor of Environmental Policy, Bryant University, Rhode Island, USA	Ciliates in extreme environments
Prof Zhongtang Yu	Professor, College of Food, Agricultural, and Environmental Sciences OSU Center of Microbiome Science Department of Animal Sciences 110E 2029 Fyffe Road Columbus, OH 43210-1095	Genomics of Rumen Ciliates
Prof. Elena Sabaneyeva	Professor, Saint Petersburg State University	Symbiotic associations in ciliates: problems and

		perspectives
Dr. Alan Warren	Natural History Museum Cromwell Road, London SW7 5B, UK.	Protists are for everyone: A personal overview of knowledge dissemination and promoting public awareness.
Dr Adriana Vallesi	<i>Associate Professor,</i> <i>University of Camerino,</i> Macerata, Marche, Italy	Pheromone and pheromone genes structure, expression and evolution.
Rosaura Mayén Estrada	Universidad Nacional Autónoma de México, Mexico	Symbiotic ciliates of molluscs with emphasis on species from Mexico
Dr Valentina Serra	Project Assistant, H2020- MSCA-RISE "NGTax" project, Pisa University	Next Generation Taxonomy: Ciliophora and their bacterial symbionts as a proof of concept" (Acronym: NGTax)
Dr Yuanyuan Wang	Post Doctoral Fellow, Laboratory of Protozoology, Institute of Evolution and Marine Biodiversity, Ocean University of China	Semi-conservative transmission of eukaryotic N6-adenine methylation, 6mA
Dr Harpreet Kaur	Postdoctoral Fellow Dacks Lab Division of Infectious Disease, Department of Medicine, University of Alberta	Expansion of SM and Qa-SNARE proteins to regulate vesicle fusion in ciliates
S.Sripoorna	Postdoctoral Fellow Animal Science Building, Ohio State University, Columbus, Ohio, USA	Bioinformatics analysis of heavy metal (Cadmium and Copper) binding proteins and Cysteine-rich proteins in <i>Tetmemenasp.</i> SeJ-2015 to affirm their roles in heavy metal tolerance

Title: 7th International Conference of National Soil Contamination and Research (INSCR 2022) Modulating the Environment with Microbes

Organizers: Acharya Narendra Dev College, DU, Deen Dayal Upadhyaya College (DU), Gargi College (DU), Kirori Mal College (DU), PG Department of Zoology, Magadh University (MU), Ramjas College (DU), Sri Venkateswara College (DU), Sri Guru Tegh Bahadur Khalsa College (DU), C.M.P. College (AU), Bhaskaracharya College of Applied Sciences, Shivaji College, Miranda House, KIIT Bhubenswar, Devbhoomi, U.K., Kolhan University, Jharkhand, PhiXgen Pvt. Ltd., Gurugram and College of Commerce, Arts & Science, Patna November 07-11, 2022

Date: **November 07-11, 2022**

Number of Participants: 330

The Indian Network for Soil Contamination Research (INSCR) organized its 7th Annual International Conference titled "MODULATING THE ENVIRONMENT WITH MICROBES" from 7th to 11th November, 2022 in online mode. The Conference was organized in association with University of Delhi Colleges, namely, Acharya Narendra Dev College; Bhaskaracharya College of Applied Sciences; Deen Dayal Upadhyaya College; Gargi College; Kirori Mal College; Miranda House; Ramjas College; Shivaji College; Sri Venkateswara College & SGTB Khalsa College ; CMP College, Allahabad; Kolhan University, Jharkhand; KIIT University, Orissa; PG Department of Zoology, Magadh University; SoAS Dev Bhoomi Uttarakhand University, Uttarakhand & Phixgen Pvt. Ltd.

Microbes play diverse roles in agricultural, industrial, clinical, environmental biology and biotechnology which is very significant for the attainment of various Sustainable Development Goals (SDGs). The pandemic COVID-19 brought to forefront the importance of microbial research; be it in microbial genomics, metagenomics, diagnostics or vaccine development. The central theme behind the INSCR 2022 conference was to facilitate understanding, discussions and inter-disciplinary collaborations for the advancement of microbial research and development.

Various thematic sessions were carefully planned to host many renowned international and national speakers who will showcase important scientific advances in different aspects of microbiology and emphasize on the role of microbes in modulating various environments. The sessions were not only one-stop platform for knowing recent advancements but also provided the requisite 'food for thought' for future innovations and discourse. Special sessions on 'Microbiology for Science and Society,' 'Women in Science' and first-time being conducted 'Microbiology in India in the last 75 years' (to commemorate Azadi ka Amritmahotsav) touched upon the societal aspects including the rising need of Microbiology Literacy, understanding the role & contribution of women scientists and a trip down the memory lane highlighting the status & contribution of Microbiology in India.

The major highlight of INSCR-2022 was the support of two well-known International Microbiological Societies, ISME, International Society of Microbial Ecology and FEMS, Federation of European Microbiological Societies. The Editor-in-Chiefs of these two organizations presented in the Pre-conference Workshops on 'Genomics, Metagenomics and

Bioinformatics in Microbial Ecology' and 'Art of Scientific Writing and Communication', on 7th and 8th November, 2022, respectively. Keeping in mind the exhaustive nature of online conferences, cultural sessions, agar art competition etc. were also planned. All in all, the conference brought together experts from various fields of microbiology on one platform to facilitate bilateral exchange of knowledge, ideas and opinions that can shape the future discourse of microbial research required for the sustainable development.

Appendix V

Establishment of Central Instrumentation Facility with state-of-the-art equipments for Skill Enhancement

Establishing a Central Instrumentation Facility with state-of-the-art equipment for skill enhancement is a commendable initiative. Such a facility would greatly contribute to the development of technical skills, research capabilities, and innovation in various fields.

CIF has the following state of art equipments for cutting edge research at UG level

PCR Machine with 1 KVA UPS	Non-Refrigerated Centrifuge
Br Biochem Dual Wavelength Bench (UV Transilluminator)	Horizontal Gel Apparatus
Cilika Microscope BT-P	SPR Machine
Atomic Absorption Spectrophotometer with 8 Auto Lamp Turret & Variable Slit Control	Multiparameter
Hp Prodesk 600 G6 Microtower PC (CPU)	Multitech Systems DC Regulated Power Supply.
Set up for Satellite Communication System	Vertical Gel Electrophoresis Unit
Control Labsetup with software and data acquisition	Horizontal Gel Electrophoresis Unit
AI Builder	UV-Vis Spectrophotometer
IoT Builder	3D Printer


 Co-ordinator
 DOT STAR COLLEGE SCHEME
 Acharya Narendra Dev College
 (University of Delhi)


 Officiating Principal
 Acharya Narendra Dev College
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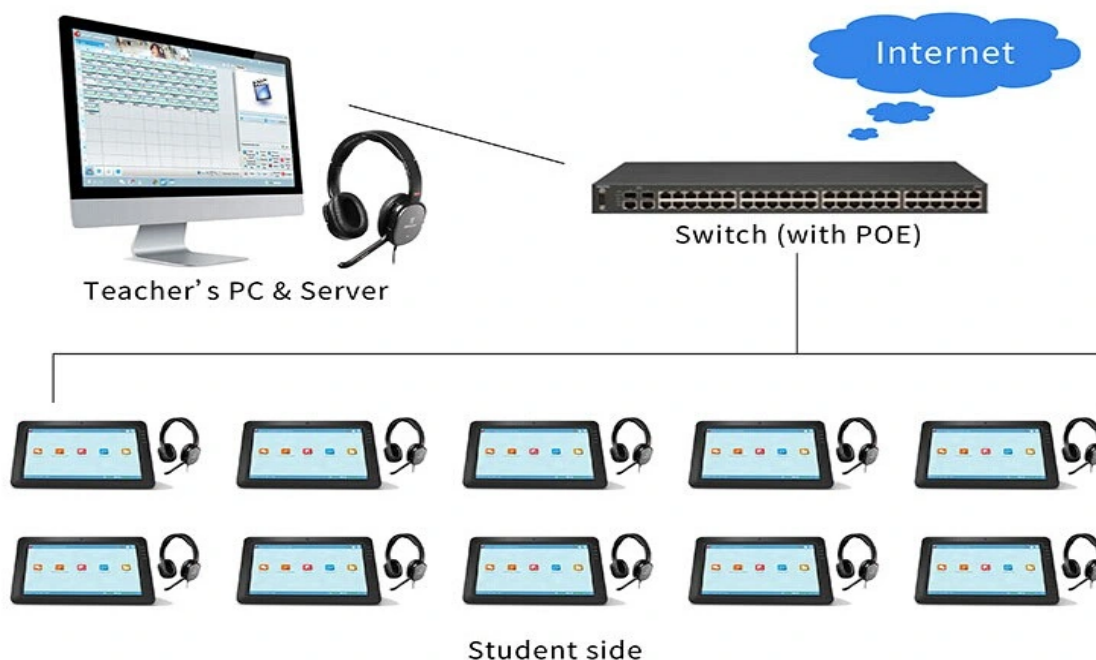
Appendix VI

New Initiatives under DBT STAR COLLEGE SCHEME

Language Lab @ ANDC

In alignment with ANDC's dedication to readying students for the future, a language laboratory has been recently established within the college premises to enhance language learning efficiency. The lab is fully equipped with vital elements such as a soundproof hearing booth, a console, and advanced digital language lab software to facilitate real-time interaction between educators and students. The lab accommodates 20 systems, each installed with the Orell Talk software, available in both English and Hindi

Components of Language Lab



The laboratory provides a platform for students to engage in speech exercises, evaluate their pronunciation against model examples, record and review their own speech, and self-assess language proficiency. This environment supports learners in enhancing their language comprehension, allowing them to learn at their individual pace.

While the primary use of the lab is for practical sessions of the Skill Enhancement Courses (SEC) offered by the Department of English, any student within the college aiming to enhance

their communication abilities can make use of it. Given that the software aligns with the format of international English language proficiency tests like IELTS and TOEFL, students can utilize the lab for exam preparation. Additionally, the college regularly organizes practical workshops focusing on the fundamental language skills—listening, speaking, reading, and writing—for students. The language lab serves as a valuable resource for conducting these workshops

College has also organized Hands on Workshop – Basic Language Skills

Acharya Narendra Dev College (University of Delhi) organised a Hands on Workshop – Basic Language Skills under the aegis of DBT Star College Scheme and IQAC from August 7-11, 2023. Prof. Ravi Toteja, Officiating Principal of the college, was the patron of the workshop. Under his able guidance and with the help and support of Prof. Pooja Bhagat, coordinator of the event, the 5 day workshop was conducted successfully.

15 students of the college participated in the workshop. Dr. Joita Dhar Rakshit, Assistant Professor, Department of English, ANDC, was the resource person of the hands on workshop. She covered the 4 basic skills of language – listening, speaking, reading and writing – on the first four days. The last day was dedicated to revision, queries, doubts and clarifications. During the course of the workshop, the participants were given hands on experience in the language lab of the college. Using the Orell software in the language lab, they had practical sessions on the four basic skills of language. The students found the hands on experience interesting and very helpful and enthusiastically attended all the sessions. On the last day, certificates were given to those participants who had successfully completed the 5 day workshop by Prof. Ravi Toteja. Overall, the participants responded positively and expressed the desire to participate in more such workshops in the future.

Value Addition Courses by Acharya Narendra Dev Kaushal Kendra


Skill Hub @ANDC

Nodal Officer: Prof. Pooja Bhagat

The college aims to provide technical and entrepreneur skills to students and make them future ready. This will empower them to become job providers and not the job seekers in future. With a vision to prepare skilled youth, the college is running ‘Kaushal Kendra’ which offers value added courses in different fields, not only to the undergraduate students enrolled in the college, but also to other your aspiring students. Following Courses were conducted this year:

S.No.	Name of the Course	Period	Hours	No of Students attended the Course
1	Web Developer	March 16, 2022- November 21, 2022	400	19


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2	'Research Methodology' for Physical Science students	August 30, 2022- November 19, 2022	60	21
3	'Tools and Techniques in Biological Sciences' for Life Science students	August 29, 2022- November 11, 2022	60	52
4	Basics of Research Methodology for Physical Science and Life Science students	January 05, 2023- June 17, 2023	40	18

- 1) **Web Developer:** The National Education Policy (NEP) 2020 has recommended incorporation of vocational skills into School and Higher Education curriculums so that students can design their own paths of study and life plans. To mainstream vocational education, sharing of infrastructure and developing well-defined pathways for students to continue with their chosen academic-vocational pursuits, an initiative for creation of Skill Hubs across the education and skill ecosystem has been proposed to actualize the intent on the ground. The 'Skill Hub Initiative' under Pradhan Mantri Kaushal Vikas Yojana 3.0 (PMKVY 3.0) scheme focuses on the introduction of skill training programs in the education ecosystems. Skill Hubs are nodal skill centers identified to provide skill development and vocational training opportunities to target population segments from school dropouts and out-of-education candidates. Acharya Narendra Dev Kaushal Kendra, Skill Hub @ ANDC is selected as a Training Provider for Web Developer Course. One batch of 19 students had completed the course in 2022.
- 2) **Research Methodology:** The college conducted an add-on courses namely 'Research Methodology' for Physical Science students in the college. The course was designed and taught by ten Prime Minister Research Fellows (PMRF) of IIT Delhi and was taught by six research scholars from the Department of Biochemical Engineering. The classes were conducted on Tuesdays, Thursdays, and Fridays 4:00 – 6:00 PM in the Seminar Hall/ Web Lab. Second- and third-year undergraduates from Chemistry and Physical Science attended the course. The aim of the course was to teach students outside of the classroom and aided them in developing their capacity to carry out useful research. The course inspired them to consider a career in research.

In the curriculum, students of Physical Sciences learned:-

1. Theoretical and practical demonstration of instrumentation techniques that are a critical part of industry and academia. (GC, HPLC, Chromatographic separation techniques etc.)
2. Learn the essentials of softwares and search engine such as ChemDraw, Gaussian, Scifinder etc.
3. Research methodologies- learning how to read scientific papers and design your own reactions.
4. Practical demonstration wherever required.

Main Attractions of the course were:-

- Training by PMRF (Prime Minister's Research Fellow) scholars from IIT Delhi.
- No fee was charged for this course.
- Certificate was provided after successful completion of the course.
- The successful candidate visited IIT Delhi to learn new techniques.
-

3) Tools and Techniques in Biological Sciences

Course Conveners

Dr Pooja Bhagat

Prof Seema Makhija

The college conducted an add-on courses namely 'Research Methodology' for Life Science students in the college. The course was formulated to introduce undergraduate students to concepts and approaches used in research in biological sciences. It was taught by six research scholars from the Department of Biochemical Engineering and Biotechnology (DBEB), IIT Delhi, as a part of their Teaching Assistantship requirement for the Prime Minister Research Fellowship (PMRF). The classes were conducted on Mondays, Wednesdays, and Fridays 4:00 – 6:00 PM in the Seminar Hall. Second- and third-year undergraduates from Life Sciences, Zoology, and Biomedical Sciences attended the course.

In this curriculum, students of Life Science learned:-

1. Good laboratory practices
2. Cell culture and Analytical techniques
3. Bioprocess technology
4. Genetic Engineering
5. Reading-writing research papers, resource searching
6. Introduction to Bioinformatics & Functional Genomics
7. Nanobiotechnology
8. Basics of Cancer biology
9. Waste treatment technology
10. Practical demonstration wherever required.

Main Attractions of the course were:-

- Training by PMRF (Prime Minister's Research Fellow) scholars from IIT Delhi.
- No fee was charged for this course.
- Certificate was provided after successful completion of the course.

4) Basics of Research Methodology

Course Conveners

Dr Pooja Bhagat


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Prof Seema Makhija

The college conducted a certificate course namely 'Basics of Research Methodology' for Physical Science and Life Science students of the college. The course was designed by Prime Minister Research Fellows (PMRF) of IIT Delhi. It was a 40 Hrs certificate course. The purpose of the course was to teach the students beyond the classroom and help them to increase their potential to conduct valuable research. This course motivated them about the potential career in research. First-year undergraduates from Chemistry, Physical Sciences, Life Sciences and Biomedical Sciences attended the course.

The course was taught by 10 PMRF of IIT Delhi for 2 hours on Saturdays. In this curriculum, students learned-

1. Essential Research related software and search engine
2. How to plan any General Reaction (Organic and Inorganic)
3. Electrochemistry (Theory + Practical Experience)
4. General Text book Name Reaction and their Practical Experiment (Synthesis)

Main Attractions were:-

- Training is given by PMRF (Prime Minister's Research Fellow) scholars from IIT Delhi.
- No fee was charged for this course.
- Certificate was provided after successful completion of the course.
- The successful candidate attended one day workshop in IIT Delhi to learn new techniques.


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Appendix VII

Interdisciplinary Projects

Interdisciplinary Projects under DBT STAR College Scheme

The grant received by DBT has helped in enhancing scientific exposure of undergraduate students via participation in various interdisciplinary projects/ routine lab work conducted under DBT-STAR college scheme.

S. No	Title of the Project	Mentor/s	Name of the Student/s	Course & Semester
1	Study of allelopathic effects of weeds on seed Germination of Vignaradiata L.	Dr.Rashmi Sharma	Vishal Bahadur B.K.	B.Sc. (H) Botany, II Year
			Sahil Kumar	
2	Studying Sociological Impact of Madness and Maternity in Select literary works	Ms. Ankita Rasaily	Parthib Kalita	B.Sc.(H) Zoology, I Year
			DevikaA.P	
			Pratikshya Panda	
			AnkishaChoudhary	
			AnushkaTomar	
3	Detection of chronic myeloid leukemia in patients through novel techniques	Dr.Sunita Jetly	Jassi Goyal	B.Sc. (H) Biomedical Science, II Year
		Dr.Ritu Khosla		
4	Digital Empowerment of students of Acharya Narendra Dev College	Dr.Sunita Narang	Yuvraj Saroha	B.Sc. (H) Maths, II Year
			Ayush Bhardwaj	B.Sc. (H) Comp.Sc, II Year
		Dr.Shallu Mahajan	Awani Sharma	B.Sc. (H) Comp.Sc., II Year
			Utkarsh Tiwari	B.Sc. (H) Maths, II Year
5	Extraction of Phytochemicals from such as flavonoids and alkaloids and Characterization of	Dr.Ritu Khosla	Khushi Bhatt	B.Sc. (H) Biomedical Science, II Year
		Dr.Archana Pandey	Arpita Singh	

	their Antioxidant and Anti-Inflammatory Properties through in-vitro assays.			
6	Study of Rise in Shingles cases as an aftermath of Covid 19	Dr.Ritu Khosla Dr.ArchnaPanday	Anshika Bansal	B.Sc. (H) Biomedical Science, II Year
7	Synthesis of silver nanoparticles using environment friendly chemicals	Dr.Ritu Khosla Dr.Archna Pandey Dr. Rajeev Ranjan	Najjam	B.Sc. (H) Biomedical Science, II Year
8	To synthesize silver nanoparticles and study their stability characteristics.	Dr.Ritu Khosla Dr.Archna Pandey Dr. Rajeev Ranjan	RituPapney	B.Sc. (H) Biomedical Science, II Year
9	Synthesis and stabilization studies of silver nanoparticles	Dr.Ritu Khosla Dr.Archna Pandey Dr. Rajeev Ranjan	Vipasha Kamboj	B.Sc. (H) Biomedical Science, II Year
10	Estimation of Pi using Monte Carlo method and Platonic Solids and verifying the Paul Dirac delta function	Dr.Sanjeeta Rani Dr. Manisha Verma Dr.Subhash Kumar	SamyakMarathe	B.Sc (H) Physics, I Year
11	Study of the Role of Nyquist Plot and Graphical Analysis of Electrochemical Impedance Spectroscopic Data	Dr.Sanjeeta Rani Dr. Manisha Verma Prof.SunitaHooda	Kunwar Sugam Anugrah Abhineet Singh Rajput	B.Sc (H) Physics I Year
12	Estimation of pi using Platonic Solids	Dr.Sanjeeta Rani Dr. Manisha Verma Dr.Subhash Kumar	Manan Vyas	B.Sc (H) Physics, I Year
13	A Study of Select factors affecting the Stock Market	Dr. Sandeep Kr. Goel Dr.JitenderGoel	Karuna Roy AparnaChaurasia Muskan	B.Com (H), I Year

14	A Study on Green Marketing Initiatives of Select Indian Companies	Dr. Sandeep Kr. Goel	Aayushi Gupta LakshyaSabhaal	B.Com (H), II Year
		Dr.JitenderGoel		
15	An Analysis of IPO Market in India	Dr. Sandeep Kr. Goel	Nitin Kumar Aggarwal	B.Com (H), III Year
		Dr.JitenderGoel	Aadya Agrawal	
16	Cash Burn Model in Business: A Study of Select Start-ups Worldwide in Achieving Profitability	Dr. Sandeep Kr. Goel	Charudev Gupta	B.Com (H), III Year
		Dr.JitenderGoel		
17	Application of subsets and Beyesian Theorem in Spam Detection	Dr.VatslaKohli Ms. Seema Gupta	MayankRathi	B.Sc. (H) Maths, I Year
18	Analysis of Continuum Hypothesis on it's Existence	Ms. Seema Gupta Dr.VatslaKohli	Vishal Kumar	B.Sc. (H) Maths, I Year
19	To study the effect of temperature on the in vitro growth of ciliates (Oxytricha sp.)	Prof. Ravi Toteja	Mohd. Tabish	B.Sc. (H) Biomedical Sciences, III Year
		Prof.SeemaMakhija	Mohammed Ali	
		Prof. Pooja Bhagat	Hossain Maahi	
20	To study the effect of pH on the in vitro growth of ciliates (Oxytricha sp.)	Prof. Ravi Toteja	HeenaParveen	B.Sc. Life Sciences, III Year
		Prof.SeemaMakhija	Indu M	
		Prof. Pooja Bhagat		
21	To study copper (Cu) Toxicity on Oxytricha sp.	Prof. Ravi Toteja	Khushi Rani	B.Sc. (H) Biomedical Sciences, II Year
		Prof.SeemaMakhija	Khushboo	
22	Tools and Techniques for	Prof. Ravi Toteja	ShailviSwapnil	B.Sc. (H) Zoology, II Year
		Prof.SeemaMakhija		

	species identification in ciliates.			
23	Assessing the Impact of Heavy Metals on Plant Fitness and the efficacy of Phytohormones in mitigating their effects: A Comprehensive Meta-Analysis Review	Prof.Charu K Gupta,	AdiyaVatsa	B.Sc. (H) Botany II Year
		Dr.Vineet Kumar Singh	Mitali Saini	
			Roja Sharma	
24	Effect of particulate matter on reproductive fitness of native tree species in Delhi	Prof.Charu K Gupta,	Vaibhav Khatri	B.Sc. (H) Botany I Year
		Prof.Arijit Chowdhury	SrijalPriya	
		Dr.Vineet Kumar Singh	Aniket Raj	
25	Cultivation of Lentinula edodes on college generated lignocellulosic waste and isolation of extracellular enzymes from spent mushroom substrate	Dr.SumitSahni	Samridhi Mishra	B.Sc. (H) Botany II Year
		Dr.Vineet Kumar Singh	Ridhi Rai	
		Dr. Anita Narang	Nidhi Sharma	
			Pratiksha Saini	
	JangidiRanjit			
26	Enhancement of Antibiotic (Kanamycin) efficacy through synergistic effect using multifarious medicinal plant extracts to curb Micrococcus luteus and E. coli growth	Dr. Anita Narang	Saarthak Kumar	B.Sc. (H) Botany, II Year B.Sc. (H) Biomedical Science, II Year
		Dr.Satendra Singh	Suprobh Ahna Borah	
		Dr.SumitSahni	Hirtik Singh Rathore	
27	Study of Labulbeniomycetes	Dr.Anupama Shukla	Akza K John	B.Sc. (H) Botany, II Year
			Anson Antony	B.Sc. (H)

				Botany, II Year
			Maushmi PT	B.Sc. (H) Biomedical Science, II Year
28	Labulbeniomycetes	Dr.Anupama Shukla	Haemakshi Biswas	B.Sc. (H) Botany, II Year
		Dr. Anita Narang	Anushka Tiwari	
		Dr.SumitSahni	ShurutiPanwar	
29	Genotoxic effect of Heavy Metals Cr and Hg using Allium cepa L. Investigating the impact of oxidation stress on genetic stability during cell division	Dr.SumitSahni	Ajit Narayan Jha	B.Sc. Prog. Life Sciences I Year
		Dr. Anita Narang	Anika Sharma	
		Dr.Vineet Kumar Singh	Aradhy	
			Anurag	
30	Synthesis of 2 D materials for sensing applications	ArijitChowdhuri	Aditya Kumar Singh	B.Sc. (H) Physics, II Year
		Prof.Charu Khosla Gupta	Ashish Gupta	
		V. Bhasker Raj		
31	Ambient Air Pollution measurement using 2D materials	Prof.ArijitChowdhuri	Ravi Kant Shukla	B.Sc. (H) Physics II Year
		Dr. V. Bhasker Raj	ShivamTomar	
		Prof.Charu Khosla Gupta		
32	Learning the techniques to detect the thalassemia carriers through CBC and mutational analysis through Sanger sequencing	Dr.SunitaJetly	Srishti	B.Sc. (H) BMS, II Year
		Dr.Deepshikha	Suravi Bhaya	B.Sc. (H) BMS, III Year
33	Genome and transcriptome data Analysis for novel target identification and Characterization	Dr.Archna Pandey	Hariom Chaudhary	B.Sc. (H) Biomedical Science, I Year
		Dr Rimpy Kaur Chowhan		
34	To study interaction of SARS-CoV-2's surface and	Dr.Archna Pandey	Ajay Kumar Singhmar	B.Sc. (H) Biomedical Science, III Year
		Dr Rimpy Kaur	Hirday Sehgal	

	secretory proteins with amyloidogenic proteins responsible for cardiac amyloidosis.	Chowhan		
35	To study Ethanol Exposure on Different Developmental Stages of Zebrafish (Danio rerio).	Dr. Monica Misra	Bhawna Gurnani	B.Sc. Life Science, II Year
		Ms. Bhumika Chauhan	Aru Chaudhary	B.Sc. Life Science, II Year
			Jasmine Negi	B.Sc.(H) Zoology, II Year
			Tannu Gond	B.Sc.(H) Zoology, II Year
36	To establish the culture of Zebrafish (Danio rerio) and observe their growth 120 hrs Post-fertilization.	Dr. Monica Misra	Divya Pandey	B.Sc. Life Science , II Year
		Ms. Bhumika Chauhan	Anshika Tyagi	B.Sc. Life Science , I Year
			Vasundhra Bhattacharya	B.Sc. Life Science , I Year
37	To study effects of different diets on growth and Development of Zebrafish (Danio rerio)	Dr. Monica Misra	Shikha Negi	B.Sc. Life Science , II year
		Ms. Bhumika Chauhan	M.Vathsala	B.Sc. Life Science , II year
38	Exploring the Cosmos	Dr Meenu Mohil	Vijay Rawat	B.Sc(H) Physics, II Year
39	Determining the propagation loss coefficient of the given single-mode optical fibre	Dr Meenu Mohil	Jagdish Arya	B.Sc. Physical Science with Chemistry, III Year
		Dr Sanjay Kumar	Harsh Bhati	B.Sc. Physical Science with Chemistry, III Year
40	Obstacle Avoidance Robotic Vehicle	Dr. Monika Bhattacharya	Dev Panchal	B.Sc. (H) Electronics, II Year
		Dr Ravneet Kaur	Anshu Kumari	
			Saurabh Kaushik	
			Prachi Dubey	

41	Sunlight Sensitive Smart Roof with Rainfall Protection	Prof. Anju Agrawal	Aman	B.Sc. (H) Electronics, II Year
		Dr. Ravneet Kaur	Muskankumar Sharma	
		Dr. Monika Bhattacharya	Vishal Gupta	
42	Fourier transform applications in image processing	Dr. Monika Bhattacharya	Prachi Dubey	B.Sc. (H) Electronics, II Year
43	GSM based Home Security Alarm System	Dr. Monika Bhattacharya	Vishal Gupta	B.Sc. (H) Electronics, II Year
		Ms. GauriGhai	Chandan Kumar	
			Prashant Kumar	
			Sachin Jarwal	
44	A comparative study of Esports and Traditional sports: Analysis of Audience and Revenue Generation	Dr. Monika Bhattacharya	Harsh Singh	B.Sc. (H) Electronics, , I Year
		Prof. Anju Agrawal	Tanmay Sharma	
			Vansh	
45	Faculty Publication Management	Prof. Sharanjit Kaur	Shahnwaz Khan	B. Sc. (H) Computer Science, III Year
			Prakash Kumar Singh	
46	WanderLust: Travelling Application	Prof. Sharanjit Kaur	Ayush Yadav	B. Sc. (H) Computer Science II Year
		Ms Gunjan Rani	Pranav Singh	
			Riyansh Sharma	
			ShrishtiRawat	
47	Social Networks: Design, Impact and Challenges	Prof. Sharanjit Kaur	Piyush Singh	B. Sc. (H) Computer Science I Year
			Rohan	
			Sagar	
48	Repository for Crop Production and Agriculture	Ms. Nishu Singh	Dinesh Kumar	B.SC (H) Computer Science, II Year
			Mihir Kumar Sah	
49	Effect of Vitamin on the Germination of Tomato Seedlings	Dr. Geetika Kalra	Afshar Ajmeri	B.Sc.(H) Botany, II Year
		Dr. Anita Thakur	Aman Kumar	
			Anjali	
			S. Ananya	
			Ritik Pratap Singh	
50	Estimation of Chlorophyll Content	Dr. Charu K Gupta	Shubhi Dixit	B.Sc. Life Science, I Year

	in the native Indian tree species	Dr.ArijitChowdhuri Dr. Anita Thakur	Niharika Sehgal	B.Sc.(H) Biomedical Science, I Year
51	How to convert a business idea into a successful start-up?	Dr.Surinder Kaur	VedantMaheshwari	B. Com. (H), II Year
52	Digital Economy – An analysis on its effects and applications upon India	Dr.Surinder Kaur Ms. RupaliPabreja	Kunal Kumar Himanshu Raj	B. Com. (H), I Year
53	Digital Marketing- An analysis of perspective of consumer in India	Dr.Surinder Kaur Ms. RupaliPabreja	Shrutikumari Shreya Gupta	B. Com. (H), I Year
54	The Impact of YULU on Urban Mobility and Environment	Dr.Surinder Kaur Ms. RupaliPabreja	Rishabh Singh Kaushik Vivekkunwar	B. Com. (H), I Year
55	Impact of artificial intelligence in the economy of India	Dr.Surinder Kaur	SushantAnand	B. Com. (H)), I Year
56	Digitalization of Indian economy	Dr.Surinder Kaur	Vicky kumar	B. Com. (H)), I Year
57	Synthesis, characterization and antibacterial study of nanocomposite prepared from laboratory waste	Prof.Seema Gupta Dr.Satendra Singh	NibhaKumari DivyaGulihar	B.Sc. (H) Chemistry, II Year
58	Synthesis, characterization and antibacterial study of iron oxide nanoparticles from lab waste	Prof.Seema Gupta Dr.Satendra Singh	Bhumika Bhardwaj Dipankar Dev Rishi	B.Sc. (H) Chemistry, II Year
59	Preparation of deep eutectic solvents and their application to synthesize silver	Prof.Seema Gupta Prof. Pooja Bhagat	KanjikaRastogi Nikita Sharma Sarthak Singh	B.Sc. (H) Chemistry, II Year

	nanoparticles			
60	Adsorption of Metformin Hydrochloride Drug by Chitosan-Based Graphene Oxide (GO) Nanocomposites	Prof. Sunita Hooda	Kapil Sharma	B.Sc. Life sciences, II Year
		Prof. Geetu Gambhir	Puneet Chauhan	
			Soven Kumar Samal	
61	Study of Hybrid Magnetic Spinels for Photocatalysis	Prof. Sunita Hooda	Zubishah Rais	B.Sc. Life sciences, II Year
		Prof. Geetu Gambhir	Srashti Gupta	
		Dr. Bhawna Kaushik		
62	Nano composites of Magnetic Tamarind with Cobalt Oxide as a promising Adsorbent for Reactive Blue 19 Dye from Wastewater	Prof. Sunita Hooda	Ilma Khan	B.Sc. Life sciences, II Year
		Prof. Geetu Gambhir	Ayushi Rajput	
		Dr. Manisha Verma		
63	“VEHICLE TRACKING SYSTEM”	Prof. Chandra Kanta Samal	Ayush Chaudhary	B.Sc. Physical Science, II Year
		Ms. Gunjan Rani	Chetna Panchal	
			Divya Mishra	
			Pranjal Verma	
	Ravi Tomer			
64	Translating Court Judgments into regional languages	Ms. Gunjan Rani	Shubh Sankhyadhar	B. Sc. (H) Computer Science, II Year
			Chandan Kumar	
			Shorya Bhatnagar	
65.	Departmental Website ELE.DEP	Dr. Ravneet Kaur Ms. Gauri Ghai	Govind Kushwah Abhinav Saxena Pankaj Kumar	B.Sc. (H) Electronics, I Year
66	D2C selling portal for the farmers produce based on nearest traversals of demand	Dr. Preeti Marwaha	Arpit Bharadwaj	B.Sc.(H) Comp. Sci., II Year
			S Kanak Megha	
67	Crafting and Reveiling: Invisible Cloaks	Dr. Preeti Marwah Dr. Arunita Chaukiyal	Nishant Pratap Singh Adi Maqsood	B.Sc.(H) Comp. Sci., II Year



DBT SPONSORED: UG RESEARCH PROJECTS

Appendix VIII

No. of new experiments introduced

Biomedical Science: (33)

S. No.	New Experiments Introduced
1	Qualitative tests for Amino acids and Proteins: Ninhydrin, Xanthoproteic, Million's, Lead Acetate, Biuret test
2	Qualitative test for Fats
3	To study the titration curve of glycine
4	Estimation of a Reducing sugar in a given sample.
5	Analysis of sodium hypochlorite content in various household products.
6	To detect primary alcohol in sample/ household products.
7	To detect aromatic amines in the sample/ household products.
8	To study various toxic substances in terms of exposure, health effects, from various online resources (such as https://www.atsdr.cdc.gov/ , TOXNET or other sources)
9	Isolation and purification of pure bacteria: streaking for single colonies
10	Propagation of pure bacteria in liquid culture
11	Field visit to a clinical microbiology lab/diagnostic lab to familiarize with latest tools and

	techniques used in microbial research
12	Phytochemical screening of <i>Curcuma longa</i> by solvent extraction: Terpenes and polyphenols
13	Represent different types of data in tables and graphs (Line chart, histogram, bar chart, frequency polygon, pie chart) using any spreadsheet software like MS EXCEL.
14	Calculate various measures of central tendency (Arithmetic mean, mode, median and partition values) and dispersion (Range, standard deviation, coefficient of variance and covariance) using any spreadsheet software like MS EXCEL.
15	Calculate probabilities for different distributions- normal and binomial using any spreadsheet software like MS EXCEL.
16	Prepare scatter plot between two variables and interpret the relationship between them using correlation and simple linear regression analysis using any spreadsheet software like MS EXCEL.
17	Perform large sample test for single mean and difference of means using any spreadsheet software like MS EXCEL.
18	Perform Student's t-test for one sample, independent samples, and paired samples using any spreadsheet software like MS EXCEL.
19	Perform Chi-square test using any spreadsheet software like MS EXCEL.
20	Perform One-way ANOVA using any spreadsheet software like MS EXCEL.
21	Perform Two-way ANOVA using any spreadsheet software like MS EXCEL.
22	Perform Non-parametric analysis: The Sign test or The Wilcoxon signed-rank test using any spreadsheet software like MS EXCEL.
23	To explore any publically available database for tuberculosis/typhoid and study its epidemiology in the Indian population.
24	To study the epidemiology of malaria including geographical and seasonal distributions in India through a public database.
25	To study various parameters like risk factors, incidence, prevalence, mortality rate and DALYs. for any specific type of cancer prevalent in India through NCRP or any other public database.
26	To study the burden and causes of any hematological disorder in the Indian population.
27	To explore and analyze various national and international disease databases like ICMR/WHO/CDC/ etc
28	To prepare a questionnaire for any health condition studied in S.No. 1-5.
29	To prepare a poster/ presentation using any digital media to communicate about the epidemiology and to create awareness about any health condition studied in S.No. 1-5.
30	Measurement of absorbance & %transmittance of a solution using spectrophotometer/colorimeter.
31	Estimation of glucose concentration by an enzymatic/non-enzymatic method
32	Determination of K_m , V_{max} and K_{cat} value of a given enzyme from the provided experimental data

33	Study of diploidy in onion root tip.
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Botany: (19)

S. No.	New Experiments Introduced
1	Isolation of soluble proteins from sprouts and its separation through polyacrylamide gel electrophoresis.
2	Lignin degrading enzyme isolation from the spent mushroom substrate
3	How to develop Virtual labs for various experiments conducted in the curriculum
4	Determination of BOD, COD, TDS and TOC of different water samples
5	Determination of coliforms in water samples using eosin methylene blue (EMB) medium
6	Hydrolysis of casein by microorganisms
7	Hydrolysis of starch by microorganisms
8	Column Chromatography of chlorophyll
9	Use of various softwares like MS Excel, SPSS, R-Stat, and SigmaPlot.
10	Calculate the percentage similarity between different cultivars of a species using RAPD profile. Construct a dendrogram and interpret results
11	Estimation of organic matter content in soil samples
12	Stage of pollen dehiscence using flurochromes
13	Preparation of mushroom spawn
14	Techniques for the cultivation of Agaricus, Pleurotus and Ganoderma
15	Structure download (protein and DNA) from PDB (Textual file format- PDB and mmCIF)
16	Molecular viewer by visualization software (Ras Mol/ J mol/Swiss 3D Viewer/Pymol)
17	Translate a nucleotide sequence and select the correct reading frame of the polypeptide from the output sequences (such as, Translate tool of Expasy
18	Predict the structure of protein from its amino acid sequence. (Phyre 2/ Modweb/ CPHmodel/ Swiss Model)
19	Gene prediction using GENSCAN and GLIMMER.

Chemistry: (21)

S. No.	New Experiments Introduced
1	Introduction of Basics of Molecular Modelling, Avogadro Software & Argus Lab Software
2	Optimization of solvent system for the separation of components in Thin Layer Chromatography
3	Determination of cell constant
4	To study the kinetics of Iodide-persulphate reaction by Initial rate method. Distribution of acetic/ benzoic acid between water and chloroform or cyclohexane.
5	Study the variation of co-efficient of viscosity with different concentration of Poly Vinyl Alcohol (PVA) and determine molar mass of PVA.
6	Write a program in BASIC to calculate the values using following equations:

	Ideal gas equation Van der Waals equation
7	Write a program in BASIC to solve simultaneous equations.
8	Write a program in BASIC to plot the graph of a particle in 1-D box.
9	Effect of temperature on the action of salivary amylase.
10	Estimation of glycine by Sorenson's formalin method.
11	Acetylation of one of the following compounds: amines (aniline, o-, m-, p- toluidines and o-, m-, p-anisidine) and phenols (β -naphthol, vanillin, salicylic acid) by using conventional method.
12	Acetylation of one of the following compounds: amines (aniline, o-, m-, p- toluidines and o-, m-, p-anisidine) and phenols (β -naphthol, vanillin, salicylic acid) by using green approach.
13	To synthesize Ag nanoparticles and characterize by SPR peak.
14	To verify the Charles's law of a gas.
15	To Study the effect of various parameters on the adsorption of metal ions by Atomic Adsorption Spectroscopy.
16	Write a program in BASIC to solve quadratic equations $ax^2 + bx + c = 0$ with known values of a, b and c
17	Synthesis of ammine complexes of Ni(II) and its ligand exchange reactions (e.g. bidentate ligands like acetylacetonate, DMG, glycine) by substitution
18	To study Properties of Complexes Measurement of $10 Dq$ by spectrophotometric method Verification of spectrochemical series. method. verify spectrochemical series by recording UV spectra.
19	To perform Claisen Schmidt reaction using the green method.
20	To find out melting point of the given organic compound without using paraffin oil/acid bath.
21	To find out boiling point of the given organic compound without using paraffin oil/acid bath.

Computer Science: (44)

S. No.	Experiment
1.	PCA-normal notebook (uploaded in code folder) using fetch_lfw_people data.
2.	Use iris data to do the following: i) Standardise the data ii) Apply PCA to get first component only and plot first component wrt zero vector

	<p>(along y-axis with range -2 to 2) and visualize using colors of class label.</p> <p>iii) Reapply PCA for two components. Display range of these two components. plot the components and see the difference compared to part (1) display variance of first components (of part 3) and find out its ratio w.r.t. total variance.</p>
3.	Exploring different time zones through python libraries.
4.	Arithmetic operation in time series data: Periods and Period Arithmetic
5.	Create a Data Frame with NA values
6	Create a Data Frame of Cars and Colors and use the map function to add a third column mentioning the companies of the cars.
7	<p>Create subplots of dimensions 3X2 using both methods.</p> <p>i) Plot lines on all of them of 50 random numbers.</p> <p>ii) Keep the same x and y-axis.</p> <p>iii) The first row lines should be red.</p> <p>iv) The second-row lines should be blue.</p> <p>v) The third-row lines should be green.</p> <p>vi) All the lines are to be dashed.</p> <p>vii) Put asterisk as marker on all lines.</p>
8	<p>Create a series with 3 values at indexes 2, 4, and 7.</p> <p>i) Reindex the series as '0', '1', '9'.</p> <p>ii) Backward fill the Null values with limit 2.</p> <p>iii) Fill the null values in series from part a with 'Missing'.</p> <p>iv) Drop all the values in series from part c which are not 'Missing'.</p> <p>v) Create a data frame of values from 0 to 12 with 3 rows and 4 columns.</p>
9	<p>a. Name the index and columns.</p> <p>b. Create a series of even values of length 5 and add that series into the data frame</p> <p>a. Columns wise</p> <p>b. Row wise</p> <p>c. Reindex either columns or rows to fill the missing values in both 1 and 2 with 0.</p> <p>d. Sort the values of the data frame from section 1 in descending order.</p>
10	<p>Consider the series s1 = 8, -3, -4, 3, -4, 8, 2, 1, 2, 0</p> <p>i) Rank the series with tie-breaker method as Min.</p> <p>ii) Rank the series with tie-breaker method as First.</p>
11	<p>Create a series with all the names of colors in Rainbow:</p> <p>i) Change the index values as multiples of 3.</p> <p>ii) Display the names of colors with an index value of more than 12.</p> <p>iii) Change the index values to "Violet", "indigo",, "Black", and "White".</p> <p>iv) Check if there is any Null value in the series now.</p> <p>v) Assign the index name colors to the NaN values.</p>
12	Create a series from some Data Dictionary in Python.

13	<p>Create a data frame of 10 students in your class having their Names, IDs, and Contact Numbers.</p> <ol style="list-style-type: none"> i) Add a new column University ID to the data frame. ii) Delete the ID from the data frame. iii) Give the row names as one, two three..... iv) Find the values in the third row of the column 'Name'. v) Print all the Contact details of students. vi) Add another column semester marks. vii) Add another column 'Result' where write 'pass' if semester marks are above 40 out of 100 else write 'fail'.
14	<p>Consider the following data dictionaries.</p> <pre>{'a': 12, 'b': 45, 'd': 79, 'b': 13, 'a': 43, 'e': 33}</pre> <pre>{'b': 23, 'd': 90, 'f': 55, 'a': 21, 's': 26, 'd': 78}</pre> <p>Now performed the following operations:</p> <ol style="list-style-type: none"> i) Make series out of those two data dictionaries. ii) Append the two series by index. iii) Find the Union of series one and series two. iv) Find the difference between series one from two. v) Compute the set intersection of the two series. vi) Delete index 4 from both series.
15	<p>Implement Gradient Descent algorithm in the following manner: (Give it a try)</p> <ol style="list-style-type: none"> i) First take a dataset with single independent variable and find the best fit using Simple Linear Regression. ii) Using the values of coefficients given in step a, apply gradient descent to minimize loss function and then make prediction again. iii) Compare the best fit line of case a and b.
16	<p>Use the KNN and Naive Bayes Classifier to classify the Emails into Spam or not Spam. Also, evaluate the accuracy of both the Models.</p>
17	<p>Perform splitting of dataset into Dependent and Independent variables after identifying them.</p>
18.	<p>Download any Dataset from ML UCI repository and apply all Pre-processing Tools for:</p> <ol style="list-style-type: none"> i) Handling Missing Data ii) Encoding Independent and Dependent Variables iii) Splitting the Dataset into the Training and Test Set iv) Feature Scaling
19	<p>Perform the classification of Email spam or not using Decision Tree Classifier.</p>
20	<p>Take a dataset where features do not have a linear relationship. Implement Linear Regression on it. Also, implement Ridge Regression on it and compare the results.</p>
21	<p>Logistic Regression Classification.</p>
22	<p>Decision Tree Classification.</p>

23	Design a web page with three sections: Menu, Content, and Footer(do not consider the positioning). In the Menu section put 2 things: A link to home page and a link to contact page. In content section: write a program to ask user to give value of n and print the table of n with proper variable representation. Also provide the sample output for this program. All the keywords used in program should be highlighted as yellow. In footer section put few things: date, course name, semester, college, student name, and teacher name. All the content of footer should be aligned to right.
24	Write JavaScript to validate the form created by student in HTML practical.
25	Write JavaScript to show the usage of setInterval function using which background colour of a division keeps on changing to a random colour.
26	Implement Breadth First Search Algorithm using python.
	Implement Depth First Search Algorithm.
27	Implement A* search algorithm.
28	Create an application for Temperature and Currency converter.
29	Create an application to send username from one intent to another. (Explicit Intent Demo).
30	Create an application with an activity having EditText and a button. On clicking of button, make use of implicit intent that uses a Dial Action and let user make a call.
31	Create an application for Temperature and Currency converter.
32	Create Models using Deterministic Finite Automata.
33	Simulation of OS Process Life Cycle.
34	Simulation of Order Lifecycle on your Favorite App.
35	Simulation of Reservation of a Flight Simulation of a Fully Automatic Washing Machine.
36	Simulation of Booking Vaccine on COWIN App.
37	Simulation of Your favorite video game (eg Mario upto 1 level only).
38	Simulation of Your favorite Music App (Spotify, Gaana).
39	Simulation of College Library System : Simulation of Ordering from an Automated Canteen/Restaurant.
40	Simulation of Amazon Delivery (assume order is booked).
41	Simulation of Uber/Ola Cab booking.
42	Simulation of various functions of a MicroWave Oven.
43	Simulation of Automatic Gears in an automatic Car.
44	Simulation of TCP connection establishment

Electronics: (37)

S. No.	New Experiments Introduced
1.	Measurement of Inductance by Anderson's bridge.
2.	Characteristics of one Solid State sensor/ Fiber optic sensor
3.	To determine the characteristics of resistance transducer - Strain Gauge.
4.	Design a R-2R DAC.

5.	Design a non-sequential counter using D/T/JK Flip flop.
6.	Design an ADC circuit using ADC0804.
7.	Study of Colpitt's Oscillator
8.	Visualization of Spreadsheet Models.
9.	Visualization of Semi-Structured Data.
10.	Interactive Plots in Python and Tableau
11.	Hierarchical and Topographical Data Visualizations in Tableau.
12.	Calendar Heatmaps and Flow Data Visualizations in Python.
13.	Time Series Data Visualization in Plotly.
14.	Creating cloud account Amazon/Azure/Google/IBM to store images /files / programs
15.	Use a dataset that contains immigration details e.g. Canada for a given duration of 30 years (Canada Immigration Dataset, source: https://open.canada.ca) or any other a. Create an area plot for top 6 immigrant countries in a given duration. b. Create and year-wise immigrant bar chart from India to Canada in a given duration. c. Create a boxplot of immigrants for three given countries. d. Show the total no. of immigrants using Area Chart and Pie chart for two given countries. e. Create a scatter Histogram for the immigrants in the given year for two specific countries
16.	Build a simple quiz app in flutter for android, ios, and web.
17.	Build a cross-platform app based on your own idea.
18.	Program to calculate area of circle, rectangle and square
19.	Program to print Fibonacci series
20.	Program to print Pascal triangle
21.	Program to evaluate HCF(GCD) of two numbers
22.	Program to evaluate LCM of two numbers
23.	Program to illustrate use of various inbuilt library functions in 'math' and 'statsmodel' python library
24.	Program to count the number of vowels in a given string
25.	Program to remove all duplicate values in a given list
26.	Program to count positive and negative numbers in a list. Create two new lists: (i) having only negative numbers and (ii) having only positive numbers
27.	Program to find sun of elements in a list
28.	Program to read a list of 'n' integers. Create two new lists: (i) having only negative numbers and (ii) having only positive numbers
29.	Program to create a list of tuples from the given list having number and it's cube in each tuple
30.	Program to create a dictionary which maintains record of the following student information: Admission Number, Roll Number, Name and Marks, Display information of a particular student on the basis of Admission Number
31.	Program which contains user defined functions as a 'module' to calculate area,

	perimeter/surface area and volume of various shapes like square, cube, circle, cylinder etc.
32.	Menu driven program to implement a simple calculator (i) which is capable of performing basic arithmetic operations (addition, subtraction, multiplication, division etc.) , (ii) for evaluation of other useful functions such as $\log_{10}(x)$, $\sin(x)$, $\cos(x)$ etc.
33.	Basic Data Analysis using PANDAS python library
34.	Data Representation using Vectors and Matrices using NUMPY Library
35.	Data Munging, Data Aggregation and Grouping Operations using PANDAS, MATPLOTLIB and SEABORN library
36.	Analysis of Time-dependent data to predict Future Trends from Past Values (STATS MODEL- PYTHON LIBRARY)
37.	PROJECT: Create an AWS account and implement AWS cloud for deploying any application

Physics: (29)

S.No.	New Experiments Introduced
1	Measurement of dielectric constant of metal using Surface Plasmon resonance (SPR) technique
2	Determination of refractive index of a dielectric layer using SPR technique.
3	Measurement of P - E hysteresis and plotting its characteristics
4	Systematic determination of wavelength of LASER by studying the diffraction pattern produced by a plane diffraction grating having different grating constants
5	To determine the wavelength of LASER source using diffraction of single slit.
6	To determine the wavelength of LASER source using diffraction of double slits.
7	To determine angular spread of He-Ne LASER using plane diffraction grating
8	To find the polarization angle of LASER light
9	Studying the characteristics of Light Dependent Resistor (LDR)
10	Studying the characteristics of MOSFET
11	Studying the characteristics of DIAC
12	Studying the characteristics of TRIAC
13	Recording & reconstructing LASER viewable holograms
14	Study of Pulse Amplitude Modulation
15	Recording & Reconstructing single-step rainbow holograms
16	Study of Pulse Position Modulation
17	Study of Pulse Width Modulation
18	Study of Amplitude Shift Keying (ASK) Modulation and demodulation
19	Study of Frequency Shift Keying (FSK) Modulation and demodulation
20	Study of Phase Shift Keying (PSK) Modulation and demodulation
21	Generation and analysis of Time Division Multiplexing (TDM) waveforms
22	Study of characteristics of Junction Field Effect Transistors

23	Study of characteristics of Unijunction Transistors
24	Study of Hartley Oscillators
25	Study of Colpitt Oscillators
26	Study of Flipflops (SR, D, JK, JK Master-Slave)
27	Study of Shift Registers (SISO, SIPO, PISO and PIPO configurations)
28	Study of Counters (Asynchronous and Synchronous configurations)
29	Experimenting with Arduino microcontrollers

Zoology: (42)

S.No.	New Experiments Introduced
1	Phylogenetic analysis using bioinformatic tools.
2	DNA isolation from bacterial culture.
3	Agarose gel electrophoresis.
4	Culturing and observation of ciliates/bacteria.
5	Polymerase chain reaction (PCR) using 18S rRNA primers.
6	Isolation of environmental DNA from soil samples.
7	Determination of zooplankton diversity in freshwater samples.
8	Virtual experiment on antibiotic resistance/sensitivity in the curd bacteria.
9	Comic video on antibiotic resistance.
10	DNA extraction from human cheek cells and tomato: Virtual experiment.
11	DNA extraction from banana: Virtual experiment.
12	DNA extraction from onion: Virtual experiment.
13	Virtual experiment on antibiotic resistance/sensitivity in the curd bacteria.
14	Comic video on antibiotic resistance.
15	DNA extraction from human cheek cells and tomato: Virtual experiment.
16	DNA extraction from banana: Virtual experiment.
17	DNA extraction from onion: Virtual experiment.
18	Study of growth kinetics of Gram -ve bacteria using homemade spectrophotometer: Virtual experiment.
19	Effect of different concentrations of antibiotics on bacteria using potato slices as media: Virtual experiment.
20	Preparation of culture media: Virtual experiment.
21	Gelatin gel electrophoresis: Virtual experiment.
22	Plasmid DNA isolation: Virtual experiment.
23	Determination of effect of temperature on the activity of the enzyme lipase: Virtual experiment.
24	Preparation of buffer solutions of different pH.
25	Predicting the structure of protein using on line softwares.
26	Separation of component from a mixture of red and blue ink by paper chromatography:

	Virtual experiment.
27	Study the effect of temperature on the activity of salivary amylase: Virtual experiment.
28	Qualitative analysis of oils and fats.
29	Estimation of vitamin c or ascorbic acid.
30	Determination of pH and temperature in a pond ecosystem.
31	To determine the pH of different water sample: Virtual experiment.
32	Determination of the intensity of light penetration using a secchi disc in different water samples: Virtual experiment.
33	Comparing alkalinity of different water samples from different sources by using red cabbage as pH indicator.
34	Determination of population density, frequency and abundance in a hypothetical community (alphabets on a newspaper) by quadrat method and calculation of Shannon-Weiner diversity index for the same community.
35	Determination of the pH of different soil sample.
36	Study plankton diversity in pond water by using fold scope.
37	Study of pond water collected from different places to observe diversity in Protista using videos.
38	Study of soil samples collected from different places to observe diversity in nematodes using videos.
39	Pedigree analysis of human inherited traits using data.
40	Study and verification of Hardy-weinberg law by Chi-square analysis.
41	Study of the principle & method involved in counting of total leucocytes from blood (Life Science-3rd Semester).
42	Study of the principle, method and physiological significance of estimating bilirubin.

Appendix IX

Publications (July 2022-April 2023)

Research Publications in Scopus Indexed Journals

S. No.	Details of Paper
1	Rani, J.; Bhargav, A.; Seth, S.; Datta, M.; Bajpai, U. ; Ramachandran, S. (2022) Identification of perturbed pathways rendering susceptibility to tuberculosis in type 2 diabetes mellitus patients using BioNSi simulation of integrated networks of implicated human genes, <i>Biosci</i> 47:69. https://doi.org/10.1007/s12038-022-00309-z
2	Das, R.; Bajpai, U. (2023) Functional characterization of a DNA-dependent AAA ATPase in a F-cluster mycobacteriophage, <i>Virus Research</i> 323,198957. https://doi.org/10.1016/j.virusres.2022.198957
3	Kumar, S.; Choudhar, Y. N.; Faruq, M.; Kumar, A.; Saran, R.K.; Indercanti, P.K.; Singh, V.; Sait, H.; Jaitley, S. ; Valis, M.; Kuca, K.; Polipalli, S. K.; Kumar, M.; Singh, T.; Suravajhala, P.; Sharma, R.; Kapoor, S. (2023) Anastrozole-mediated modulation of mitochondrial activity by inhibition of mitochondrial permeability transition pore opening: an initial perspective, <i>Journal of Biomolecular Structure and Dynamics</i> , Published online. doi: 10.1080/07391102.2023.2176927
4	Agarwal, N.; Khanna, M.; Dhawan, G. (2023) Identification of suitable house-keeping genes during chikungunya virus infection, <i>Indian Journal of Medical Microbiology</i> , 42, 49–52 https://doi.org/10.1016/j.ijmmb.2023.01.007
5	Wang, N.; Mei, H.; Dhawan, G. ; Zhang, W.; Han, J.; Soloshonok, V. A. (2023) New Approved Drugs Appearing in the Pharmaceutical Market in 2022 Featuring Fragments of Tailor-Made Amino Acids and Fluorine, <i>Molecules</i> , 28, 3651. https://doi.org/10.3390/molecules28093651
6	Agrawal, N.; Saini, S.; Khanna, M.; Dhawan, G. ; Dhawan, U. (2022) Pharmacological Manipulation of UPR: Potential Antiviral Strategy Against Chikungunya Virus. <i>Indian Journal of Microbiology</i> , 62, 634–640. https://doi.org/10.1007/s12088-022-01046-5
7	Gupta, R.; Dhawan, G. ; Kumar, B.; Gautam, H. K. (2022) Realizing the New Reality: Machine Learning Curbing Antimicrobial Resistance in <i>Cutibacterium acnes</i> , <i>Research Journal of Biotechnology</i> , 17, 165-170. https://doi.org/10.25303/1712rjbt1650170
8	Sachdeva, N.; Goomer. S.; Singh, L. R.; Pathak, V. M.; Aggarwal, D.;

	Chowhan, R. K. (2023) Current status of millet seed proteins and its applications: A comprehensive review, Applied Food Research, 3, 100288 https://doi.org/10.1016/j.afres.2023.100288
9	Sachdeva, N.; Goomer. S.; Singh, L. R.; Chowhan, R. K. (2023) Preparation and nutritional characterisation of protein concentrate prepared from foxtail millet (<i>Setaria italica</i>). Food Science and Technology International, Published Online. https://doi.org/10.1177/10820132231159819
10	Khosla, R.; Jha, A.; Dua, S.; Vermani, S. G.; Rajput, N.; Pani, B. (2022) Upsurge in biomedical waste due to COVID-19 in India: A statistical correlation, challenges and recommendations, Frontiers in Environmental Science, 10 https://doi.org/10.3389/fenvs.2022.1022098
11	Sharma, B.; Kalra, G.; Verma, H. (2022) Evaluation of stigma receptivity and its properties in <i>Helianthus annuus</i> L. (Asteraceae). Vegetos. Published Online in July 2022 https://doi.org/10.1007/s42535-022-00419-x
12	Kohli, S.; Rathee, G.; Hooda, S.; Chandra, R. (2023) An efficient approach for the green synthesis of biologically active 2,3-dihydroquinazolin-4(1H)-ones using a magnetic EDTA coated copper based nanocomposite, RSC Advances, 13, 1923-1932. https://doi.org/10.1039/d2ra07496f
13	Verma, M.; Gautam, D.; Yadav, R.; Kumar, V.; Hooda, S.; Dheer, N. (2023) Role of functionalized Chitin-EDTA as a promising adsorbent for water purification, Rasayan Journal of Chemistry, 16(2), 660-666. http://doi.org/10.31788/RJC.2023.1628289
14	Verma, M.; Kumar, A.; Lal, L.; Khandelwal, D.; Tomar, P. K.; Dheer, N. ; Hooda, S.; Bhatia, M.; Sachdeva, S.; Kumari, V. (2023) Ni ²⁺ ion sensitive sustainable sensors based on 4-vinyl pyridine-ethyl acrylate copolymer, Applied Chemical Engineering, Volume 6 (1), 38-47. http://dx.doi.org/10.24294/ace.v6i1.1948
15	Rani, S.; Hooda, S.; Dheer, N.; Raj, V. B.; Sahu, I. P.; Verma, M. (2023) Complex dielectric-impedance spectroscopic studies of magnetite added chitin biopolymer, Applied Chemical Engineering, 6(1), 59-67.
16	Yadav, S.; Sewaria, S.; Chandra, R.; Singh, P.; Kumar, A.; Jain, P.; Sachdeva, S.; Kumari, K. (2023) An investigation to understand the correlation between the experimental and density functional theory calculations of noscapine, Journal of Physical Organic Chemistry, e4502. https://doi.org/10.1002/poc.4502

17	Bhalla, P.; Bhagat, P. ; Malhotra, S. (2023) A simple naphthaldehyde based sensor as optical and colorimetric for the detection of Hg ²⁺ /Cr ³⁺ in real samples, Journal of Molecular Structure, 1282, 135130. https://doi.org/10.1016/j.molstruc.2023.135130
18	Jain, M. ; Yadav, S.; Mansi; Misra, N. ; Khanna, P. ; Khanna, L. (2023) Copper-Bisbenzimidazole Complexes as Biomimetic Catalysts in Organic Transformations, Mini-Reviews in Organic Chemistry, Published Online. DOI: 10.2174/1570193X20666230102105854
19	Mansi, Khanna, P. ; Gupta, D.; Yadav, S.; Khanna, L. (2022) Hydrotrope assisted green synthesis of dicoumarols and in silico and in vitro antibacterial, antioxidant and xanthine oxidase inhibition studies, Journal of Biomolecular structure and dynamics, Published online. https://doi.org/10.1080/07391102.2022.2145368
20	Singh, M. B.; Sharma, R.; Kumar, D.; Khanna, P. ; Mansi; Khanna, L.; Kumar, V.; Kumari, K.; Gupta, A.; Chaudhary, P.; Kaushik, N.; Choi, E. H.; Kaushik, N. K.; Singh, P. (2022) An understanding of coronavirus and exploring the molecular dynamics simulations to find promising candidates against the Mpro of nCoV to combat the COVID-19: A systematic review Journal of Infection and Public Health, 15, 1326–1349 https://doi.org/10.1016/j.jiph.2022.10.013
21	Borah, S. J.; Gupta, A.; Sahu, P. K.; Dheer, N. ; Kumar, V. (2023) Science through the Lens of Nature: Recent Advances in Biomimetic Approaches towards Pesticide Degradation, SynOpen, 7(1), 33-42 DOI: 10.1055/a-2004-7289
22	Devi, P. S.; Kant, A.; Gaijon, P.; Ghosh, S.; Dheer, N. ; Kanojia, R.; Singh, P.; Singh, M. R. (2023) Elsholtzia Griffithii as an eco-friendly anticorrosive inhibitor of Mild Steel under Acid Medium, Materials Chemistry and Physics, 303, 127776 https://doi.org/10.1016/j.matchemphys.2023.127776
23	Singh, N.; Rani, P.; Tandon, N.; Arya, D. K. ; Mahato, A. (2022) UHPLC Analysis of Polycyclic aromatic hydrocarbons (PAH) compounds from the soil by QuEChERS AOAC method from Manesar industrial area, Haryana, India, J Microbiol Biotech Food Sci, 12(2) e5861. https://doi.org/10.55251/jmbfs.5861
24	Pasricha, S.; Mittal, K. ; Gahlot, P.; Kaur, H.; Avasthi, N.; Shweta (2022) Multicomponent synthetic strategies and perspectives for synthesis of linked or fused coumarin heterocycles, Journal of the Iranian Chemical Society, 19:4035–4092. https://doi.org/10.1007/s13738-022-02603-x

25	Gahlot, P.; Mittal, K. (2023) Nickel-Catalyzed Heck Reaction, SynOpen, 07(01): 114-116. https://doi.org/ 10.1055/s-0042-1751432
26	Kaushik, B.; Rana, P.; Rawat, D.; Solanki, K. ; Rana. P.; Sachdeva S.; Naikwadi, D. R.; Biradar, A. V.; Sharma, R. K. (2022) Synergic effect of Type II ZnO/BiVO ₄ magnetic heterostructures for visible light-driven degradation of bisphenol A and methyl violet, Applied Organometallic Chemistry, e6936. https://doi.org/10.1002/aoc.6936
27	Rana, P.; Dixit, R.; Sharma, S.; Dutta, S.; Yadav, S.; Arora, B.; P.; Kaushik, B.; Gawande, M. B.; Sharma, R. K. (2023) Preparation and characterization of the h-BN/ Fe ₃ O ₄ /APTES-AMF/CuII nanocomposite as a new and efficient catalyst for the one-pot three-component synthesis of 2-amino-4-aryl(or heteroaryl)-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydro-4H-chromene-3-carbonitriles, Nanoscale, 15, 3482-3495 https://doi.org/10.1039/d2nr05852a
28	Solanki, K. ; Sharma, S.; Yadav, S.; Kaushik, B.; Rana, P.; Dixit, R.; Sharma, R. K. (2023) Hierarchical 3D Flower-like Metal Oxides Micro/Nanostructures: Fabrication, Surface Modification, Their Crucial Role in Environmental Decontamination, Mechanistic Insights, and Future Perspectives, Small, 2300394 https://doi.org/10.1002/smll.202300394
29	Rana, P.; Dixit, R.; Sharma, S.; Dutta, S.; Yadav, S.; Arora, B.; P.; Kaushik, B.; Gawande, M. B.; Sharma, R. K. (2023) Insights into the catalytic potential of a rationally designed magnetic boron nitride nanosheet supported nickel catalyst for the efficient synthesis of 1,4-dihydropyridines, Reaction Chemistry and Engineering, 8, 244-253. https://doi.org/10.1039/d2re00246a
30	Rana, P.; Kaushik, B.; Solanki, K. ; Saini, K. M.; Sharma, R. K. (2023) Development of Heterogeneous photocatalysts by the covalent grafting of metal complexes onto various solid supports, Chemical Communications, Accepted for publication. https://doi.org/10.1039/D2CC03568E
31	Singh, A. K.; Goel, S. K. (2023) Idiosyncratic behaviour of shareholders towards corporate sustainability reports, Prabandhan: Indian journal of management, 16(2), 8-23. https://doi.org/10.17010/pijom/2023/v16i2/172728
32	Jain, K.; Bhatnagar, V.; Kaur, S. (2023) Epidemic dynamics in census-calibrated modular contact network, Network Modeling Analysis in Health Informatics and Bioinformatics12:14.

	https://doi.org/10.1007/s13721-022-00402-1
33	Jain, K.; Bhatnagar, V.; Prasad, S. N.; Kaur, S. (2022) Coupling Fear and Contagion for Modeling Epidemic Dynamics, " in IEEE Transactions on Network Science and Engineering, 10, 20-34. https://doi.org/10.1109/TNSE.2022.3187775 .
34	Ahuja, H.; Narang, S.; Kaur, S.; Saxena, R. (2022) Entropy for item inclination in sub-community based recommender system, International Journal of Advanced Technology and Engineering Exploration, 9(93), 1111-1133 http://dx.doi.org/10.19101/IJATEE.2021.875768
35	Sharma, A.; Sharma, P.; Bmotra, H.; Gaur, V. (2023) An extended approach to appraise electricity distribution and carbon footprint of bitcoin in a smart city, Front. Big Data 6:1082113. https://doi.org/10.3389/fdata.2023.1082113
36	Samal, C. K. (2023) Broadcast Scheduling protocols in multi-hop mobile Ad Hoc networks, International Journal of Computer Networks & Communications, 15(2) 21-38. https://doi.org/10.5121/ijcnc.2023.15202
37	Kavitha, S.; Prasad, N.S.; Samal, C. K.; Hanumanthappa, H. (2022) Evaluation of Cost benefit Analysis using One-R Supervised Machine Learning Algorithm for Healthcare, Neuro Quantology, 20(9) 6610-6615, https://doi.org/10.14754/nq.2022.20.9.NQ44773
38	Kumar, S.; Garg, A.; Chowdhuri, A. (2022) Mildly reduced graphene oxide membranes for water purification applications, Nano Express 3, 045003. https://doi.org/10.1088/2632-959X/aca7d6
39	Ghai, G.; Raj, R.; Kaur, R. (2022) An Inclusive Science Laboratory for Visually Impaired Students, Journal of Engineering Education Transformations, 36(2), 87-100. https://doi.org/10.16920/jeet/2022/v36i2/22157
40	Sharma, A.; Singh, C.; Verma, P.; Malik, A. K. (2022) Flexible inventory system of imperfect production under deterioration and inflation, Yugoslav Journal of Operations Research, 32(4), 515-528. https://doi.org/10.2298/YJOR220318025S
41	Singh, C.; Ambedkar, G. R. (2023) Optimizing EOQ model for expiring items with stock, selling cost and lifetime dependent demand under inflation, OPSEARCH, 60, 174–187 https://doi.org/10.1007/s12597-022-00616-x
42	Ansari, A. A.; Sahdev, S. K.; Kellil, R.; Prasad, S. N. (2022) Perturbed Robe's problem with charged bodies, Romanian Astron. J. , 32(2), 83–94.
43	Ansari, A. A.; Yadav, B. (2022) Behaviour of a variable mass infinitesimal

	body in the CR3BP with heterogeneous primary and finite straight segment secondary, Romanian Astron. J. 32(2), 113–125
44	Ansari, A. A.; Yadav, B. (2022) Effects of Mass Variation in the Collinear Perturbed Moulton-Copenhagen Configuration, International Journal of Analysis and Applications, 20: 44. https://doi.org/10.28924/2291-8639-20-2022-44
45	Arya, D. D. ; Prakash, S.; Boadh, R.; Chauhan, A.; Rajoria, Y. K. (2022) The Implementation of the Pentagonal Fuzzy Number toward the Solution of the Fuzzy Inventory Model with Ramp Demand Function and Three Parameters Weibull Deterioration, Neuroquantology, 20(17), 115-124. https://doi.org/10.14704/Nq.2022.20.17.Nq88017
46	Poswal, P.; Chauhan, A.; Arya, D. D. ; Boadh, R.; Rajoria, Y. K.; Gaiola, S. U. (2022) Optimal strategy for remanufacturing system of sustainable products with trade credit under uncertain scenario, Materials Today: Proceedings, 69(2), 165-173. https://doi.org/10.1016/j.matpr.2022.08.303
47	Badawi, M. N.; Bhatia, M. ; Ramesh, S.; Ramesh, K.; Khan N.; Adil, S. F. (2023) Enhancement of the Performance Properties of Pure Cotton Fabric by Incorporating Conducting Polymer (PEDOT: PSS) for Flexible and Foldable Electrochemical Applications, Journal of Electronic Materials volume 52, 2201–2215 https://doi.org/10.1007/s11664-022-10170-3
48	Badawi, M. N.; Bhatia, M. ; Ramesh, S.; Ramesh, K.; Kuniyil, M.; Shaik, M. R.; Khan, M.; Shaik, B.; Adil, S. F. (2023) Self-healing, flexible and smart 3d hydrogel electrolytes based on alginate/PEDOT: PSS for supercapacitor applications, Polymers 15 (3), 571. https://doi.org/10.3390/polym15030571
49	Badawi, M. N.; Battoo, K. M.; Bhatia, M. ; Subramaniam, R. T.; Kasi, R.; Verma, R. (2023) Construction of solid state cotton batteries with safety features of electrolytes/electrodes: A review, Materials Today Communications, 34, 104949. https://doi.org/10.1016/j.mtcomm.2022.104949
50	Bhatia, M .; Gupta, S. (2022) Space Dependent Study of Fast Neutron Spectra and Tritium Production Rate in a Fusion Reactor Blanket of Li ₂ O, Indian Journal of Pure & Applied Physics, 60, 833-840 https://www.doi.org/10.56042/ijpap.v60i10.65064
51	Verma, M.; Raj, V. B.; Rani, S. (2023) Enhancement of Carrier Mobility and Bandgap in Plastically Deformed Bi Single Crystal. J Low Temp Phys., 211(3-4), 138-155.

	https://doi.org/10.1007/s10909-023-02959-1
52	Kumar, A.; Chowdhuri, A. ; Tomar, M.; Singh, M. (2023) Boost in the Electromagnetic Shielding Effectiveness of Polystyrene–Polyaniline Composites by Addition of Carbon Nanofibers, Arabian Journal for Science and Engineering, 48:1009–1019. https://doi.org/10.1007/s13369-022-07289-0
53	Lamichhane, S.; Sharma, S.; Tomar, M.; Chowdhuri, A. (2022) Effect of variation in glancing angle deposition on resistive switching property of WO ₃ thin films for RRAM devices, J. Appl. Phys. 132, 134102. https://doi.org/10.1063/5.0103236
54	Lamichhane, S.; Sharma, S.; Tomar, M.; Chowdhuri, A. (2023) Impact of laser energy on resistive switching properties of BiFeO ₃ thin films, Materials Chemistry and Physics 293, 126824. https://doi.org/10.1016/j.matchemphys.2022.126824
55	Kumar A.; Sachdev V.K.; Chowdhuri A. ; Tomar M.; Singh M. (2023), “Electromagnetic shielding effectiveness and dielectric study of polystyrene/aluminium composite by addition of graphite and carbon nanofiber powder” - Journal of Materials Science: Materials in Electronics (JMSE) - accepted for publication
56	Lamichhane S., Sharma S., Tomar M. and Chowdhuri A. (2023) “Effect of annealing on Resistive Switching properties of GLAD assisted WO ₃ thin films” –, Physica Status Solidi A 2300358 [DOI: 10.1002/pssa.202300358]
57	Miglani R., Gupta R., Sharma A., Tomar M. and Chowdhuri A. (2023) “Ba _{1-x} Sr _x TiO ₃ Thin Film Based X-Band Selective Coplanar Waveguide Microwave Resonator Using SiO ₂ as Buffer Layer”, – Journal of Materials Research [DOI: 10.1557/s43578-023-01118-2]
58	Sao A. K., Sharma A., Verma M., Tomar M. and Chowdhuri A. (2023) “Development of CdS-SnO ₂ hybrid nanocomposite thin films for trace level detection of NO ₂ gas”,– Sensors & Actuators B, 393, 134198 [DOI: 10.1016/j.snb.2023.134198]
59	Lochab A., Jindal K., Chowdhuri A. , Tomar M., Saxena R. (2023) “Conductive polymer based MWCNTs Nanocomposite as Electrochemical Sensing Platform to detect Chloramphenicol”, – Synthetic Metals 297 117397 [DOI: 10.1016/j.synthmet.2023.117397]
60	Miglani R., Gupta R., Kumar A., Sachdev V. K., Tomar M. and Chowdhuri A. (2023) “EMI Shielding properties of sub-micron polymer composite of Barium Strontium Titanate loaded with Polystyrene, Graphite Powder and Carbon Fibre”,– Arabian Journal for Science and Engineering [DOI: 10.1007/s13369-023-08004-3]

61	Hooda S., Rani S., Raj V.B., Chowdhuri A., Gautam D. and Verma M., (2023) Effect of ferrite nanomaterials on the thermal Stability of biopolymer and graphene oxide blend Rasayan J. Chem., 16 (3), pp 1495 – 1502 [DOI: 10.31788/RJC.2023.1638445]
62	Lamichhane S., Sharma S. , Tomar M. and Chowdhuri A. (2023) “Studies on energy storage properties of BFO/WO3 bilayer thin film capacitor” -, J. of Energy Storage 5(2):e342 [DOI: 10.1002/est2.342]
63	Deb, S.; Baruah, A.; Kumar S. (2022) Ensemble-based unsupervised machine learning method for membership determination of open clusters using Mahalanobis distance, MNRAS 515, 4685–4701. https://doi.org/10.1093/mnras/stac2116
64	Joshi, R. (2022) Two-photon Bound to Bound Transitions under Strong Screening Potential, Eur. Phy. J. Plus, 137:996. https://doi.org/10.1140/epjp/s13360-022-03224-2
65	Joshi, R.; Goyal, A.; Kumar, P.; Mohan, M. (2022) Theoretical analysis of relativistic energy corrections, partition function and thermodynamic properties of spherically confined hydrogen atom, Eur. Phy. J. D, 76:149. https://doi.org/10.1140/epjd/s10053-022-00484-6
66	Joshi, R.; Kumar, P.; Jha, A. K. S.; Mohan, M. (2023) Above Threshold Ionization spectra for Debye plasma embedded atom interacting with femtosecond laser pulse, Spectroscopy Letters. 56(4), 194-203. https://doi.org/10.1080/00387010.2023.2194366
67	Joshi, R. (2023) Fine structure calculations, polarizability and oscillator strengths for C VI ion embedded in Debye plasma applying accurate Numerov method, Spectroscopy Letters. 56(5), 273-282. https://doi.org/10.1080/00387010.2023.2206906
68	Verma, N.; Joshi, R. (2023) Shannon entropy for hydrogen atom in Debye and quantum plasma environment, Physics of Plasmas, 30(6). In Production.
69	Johari, R.; Sonker, R. K.; Victor, O.; Khan, Z. H.; Aggarwal, D.; Gupta, S.; Kumar, S. (2023) Optoelectronic Study of Polymer Electrolyte Incorporated Perovskite Sensitized Solar Cell, Macromol. Symp., 407, 2200126 https://doi.org/10.1002/masy.202200126
70	Agrahari, K.; Trivedi, S. K.; Awasthi, R. R.; Nautiyal, V. K.; Sonker, R. K.; Manohar, R. (2023) Dielectric, electro-optical and spectroscopic properties of silver doped zinc oxide-ferroelectric liquid crystal composite system, Journal of Theoretical and Applied Physics, 17(3) Accepted for publication. https://doi.org/10.57647/J.JTAP.2023.1703.29
71	Sinha, S. N.; Ungarala, R.; Kumar, D.; Sangaraju, R.; Kumar, S. (2022) A novel RP-HPLC method for quantification of cholinesterase activity in human

	<p>blood: An application for assessing organophosphate and carbamate insecticide exposure. PLoS ONE 17(12): e0279287. https://doi.org/10.1371/journal.pone.0279287</p>
72	<p>Sharma, A.; Mishra, M.; Dagar, V. S.; Kumar, S. (2022), Morphological and physiological changes induced by <i>Achyranthes aspera</i>-mediated silver nanocomposites in <i>Aedes aegypti</i> larvae, <i>Front. Physiol.</i> 13:1031285. https://doi.org/10.3389/fphys.2022.1031285</p>
65	<p>Lanbiliu, P.; Samal, R. R.; Panmei, K.; Kumar, S. (2023). Beta-cyfluthrin-Induced alterations in the total and differential haemocytes count in the red cotton bug, <i>Dysdercus koenigii</i> (Fabricius,1775). <i>Journal of the Entomological Research Society</i>, 25(1), 215-227. https://doi.org/10.51963/jers.v25i1.2315</p>
66	<p>Mishra, M.; Sharma, A.; Dagar, V.S.; Kumar, S. (2022). Docking-based virtual screening ascertaining β-sitosterol-induced alterations in the <i>Helicoverpa armigera</i> Hübner gut enzymes. <i>Journal of the Entomological Research Society</i>, 24(2), 209-218. https://doi.org/10.51963/jers.v24i2.2276</p>
67	<p>Kumar, S.; Sharma, A.; Samal, R. R.; Kumar, M.; Verma, V.; Sagar, R. K.; Singh, S. P.; Raghavendra K. (2023) Laboratory evaluation of the efficacy of deltamethrin-laced attractive toxic sugar bait formulation on <i>Anopheles stephensi</i>, <i>Malaria Journal</i>, 22:92. https://doi.org/10.1186/s12936-023-04524-3</p>
68	<p>Falswal, J.; Dey, D.; Kumar, S.; (2022) An overview on non-<i>Apis</i> bees vis-à-vis the exploration of integrated taxonomic approach (Hymenoptera: Apoidea), <i>Fragmenta entomologica</i>, 54 (2): 233–246 https://doi.org/10.13133/2284-4880/703</p>
69	<p>Samal, R. R.; Panmei, K.; Lanbiliu, P.; Kumar, S. (2022), Metabolic detoxification and ace-1 target site mutations associated with acetamiprid resistance in <i>Aedes aegypti</i> L., <i>Front. Physiol.</i> 13:988907. https://doi.org/10.3389/fphys.2022.988907</p>
70	<p>Gautam, D.; Samal, R. R.; Kumar, S.; Hooda, S.; Dheer, N. (2023) One pot chemical co-precipitation preparation of magnetic graphene oxide-deltamethrin nanoformulations for management of <i>Aedes aegypti</i>, <i>Journal of Applied and Natural Science</i>,15(1), 194-202. https://doi.org/10.31018/jans.v15i1.4305</p>
71	<p>Kumar, S.; Sharma, A.; Samal, R. R.; Kumar, M.; Verma, V.; Sagar, R. K.; Singh, S. P.; Raghavendra, K. (2023) Laboratory evaluation of the efficacy of deltamethrin-laced attractive toxic sugar bait formulation on <i>Anopheles stephensi</i>, <i>Malaria Journal</i>, 22:92.</p>

	https://doi.org/10.1186/s12936-023-04524-3
72	Antil, S.; Abraham, J. S.; Sripoorna, S.; Maurya S.; Dagar, J.; Makhija, S.; Bhagat, P. ; Gupta, R.; Sood, U.; Lal, R.; Toteja, R. (2023) DNA barcoding, an effective tool for species identification: a review, <i>Molecular Biology Reports</i> , 50, 761-775. https://doi.org/10.1007/s11033-022-08015-7
73	Kumar, P., Kumar, M., Kundu, A., Solanki, R., & Kapur, M. K. (2023). Chemical profiling of <i>Streptomyces</i> sp. for detection of potential pharmaceutical molecules. <i>Biologia</i> , 1-11.
74	Chugh, N., Kumar, M. , Bhattacharya , M., & Gupta, R. S. (2023). Microwave performance assessment of AlGaN/GaN/AlGaN DH-HEMT in terms of scattering parameters and various power gains. <i>Microsystem Technologies</i> , 1-10. 10.1007/s00542-023-05477-y
75	Verma, A., Arya, D.K. , Kumar, S., Pathak, G., Khatri, V. (2023). An efficient three- component synthetic protocol for the synthesis of strurally diverse spiroannlated benzothiazolopyrimidines catalyzed by L-proline in aqueous media. <i>Research on Chemical Intermediates</i> . https://doi.org/10.1007/s11164-023-05120-5 .
76	Singh M.B., Bhagat P. , Jain P., Singh P. (2023). Exploration of DFT and TD-DFT computation to investigate the interaction between paracetamol and lithium or its compounds. <i>Journal of Molecular Liquids</i> , 383, 122114. https://doi.org/10.1016/j.molliq.2023.122114
77	Manisha Jain, Shilpa Yadav, Neeti Misra , Pankaj Khanna and Leena Khanna, Copper-Bisbenzimidazole Complexes as Biomimetic Catalysts in Organic Transformations, <i>Mini-Rev. Org. Chem</i> , published online, 2023
78	Deepika Khandelwal, Vikrant Kumar, Neeti Misra , Shallu Sachdeva, Sanjeeta Rani, Manisha Verma Ishwar Prasad Sahu, Sunita Hooda. NMR spectroscopy based configurational and compositional analysis of isobornyl methacrylate—Acrylonitrile copolymers, <i>Applied Chemical Engineering</i> (2023) Volume 6 Issue 1, 82
79	Shallu Sachdeva, Neelu Dheer, Sunita Hooda, Neeti Misra , Bipasa Arya, Manisha Verma, Sangeeta Kaul, <i>Chemistry in biosystem—A contemporary review of Schiff bases and their metal complexes as antioxidants and anti-fungal agents</i> , <i>Applied Chemical Engineering</i> (2023) Volume 6 Issue 1, 68
80	Sharma, Dr. Jyotsna, Singh, Siddhartha, Kumar, Amit, Hossain, Md, Shaik,

	Hasane, Rashed, Ahmed, Study of the Shear Alfvén Waves via Parametric Degeneration of Lower Hybrid Pump Wave in Dusty Plasma, Brazilian Journal of Physics (2023) 53:128 10.1007/s13538-023-01333-6
81	Dagar, V.S., Mishra, M., Sharma, A., Sankar, M. & Kumar, S. (2023). Alterations in the gut enzymes of <i>Helicoverpa armigera</i> induced by dietary stress of <i>Artemisia annua</i> essential oil. <i>International Journal of Tropical Insect Science</i> , https://doi.org/10.1007/s42690-023-01035-1
82	Shah, S., Das, R., Chavan, B., Bajpai, U. , Hanif, S. & Ahmed, S. (2023). Review article-Beyond antibiotics: Phage-encoded lysins against Gram-negative bacteria. <i>Frontiers in Microbiology</i> . Vol. 14. https://doi.org/10.3389/fmicb.2023.1170418
83	Gaur, V., Yadav, R., & Kaur, R. (2023). A Quantitative Approach to Prioritize Causes of Air Pollution in Delhi. <i>Indian Journal of Environmental Protection (IJEP)</i> . (Accepted)
84	Chugh, N., Kumar, M., Bhattacharya, M., & Gupta, R. S. (2023) Potential and Electric Field Analysis of Field Plated AlGa _N /Ga _N HEMT for High Voltage Applications using 2D-Analytical Approach. <i>Microelectronics Journal</i> , 138, pp 1-9
85	Kumar, A. K., Hussain, A., Joseph, A.J., Goel, S., Gupta, R., Singh, N. S. and Singh, U. (2023) Synthesis of ternary 0.49BF- 0.20PMN-0.31PT ceramic at morphotropic phase boundary for excellent die-/piezo-/ferro-/pyro-electric response. <i>Applied Physics A</i> , 128, 655
86	Kumar, A. K., Hussain, A., Joseph, A.J., Goel, S., Gupta, R., Singh, N. S. and Singh, U. (2023) Influence of Mn-doping on di-/piezo-/ferro-electric properties of 0.49 BiFeO ₃ - 0.20Pb (Mg _{1/3} Nb _{2/3})O ₃ -0.31PbTiO ₃ ceramic at morphotropic phase boundary. <i>Journal of Materials Science: Materials in Electronics</i> , 34, 1371.

Research Publications in Peer Reviewed Journals

July 2022-April 2023

S. No.	Details of Paper
1	Chaudhary, R.; Kumar, V. (2022) Evidence of breeding of <i>Jamides Bochus</i> (Stoll, [1782]) (Insecta: Lepidoptera: Lycaenidae) in New Delhi, India, <i>Bionotes</i> , 24, 252-253. (Web of Science Listed Journal)

2	<p>Chaudhary, R. (2022) Sighting of Ruddy Meadow Skimmer <i>Neurothemis Intermedia</i> (Rambur 1842) (Insecta: Odonata:Libellulidae) in New Delhi, India, <i>Bionotes</i>, 24, 254-256. (Web of Science Listed Journal)</p>
3	<p>Chaudhary, R. (2022) Ovipositing record of Tailless Lineblue <i>Prosotas Dubiosa</i> , (Semper 1897) (Insecta: Lepidoptera : Lycaenidae) from the vicinity of Delhi, India, <i>Bionotes</i>, 24, 260-261. (Web of Science Listed Journal)</p>
4	<p>Gulati. S.; Narang, A.; Shukla, A.; Katyal, R.; Mathur, R.; Kaur, J. (2022) Arbuscular mycorrhizal fungi and host plant relationship with respect to heavy metal remediation of soil, <i>Kavaka</i>, 58(3), 61-74 https://www.doi.org/10.36460/Kavaka/58/3/2022/61-74 (UGC CARE listed journal)</p>
5	<p>Sisodia, R.; Sharma, R. (2022) Bibliometric Analysis of Peer-Reviewed Literature on Stress Factors Affecting Agricultural Productivity, <i>Current Agriculture Research Journal</i>, 10(3), 170-180. http://dx.doi.org/10.12944/CARJ.10.3.02 (UGC CARE listed journal)</p>
6	<p>Saya, L.; Hooda, S.; Singh, R. W. (2022) Hydrothermally Fabricated Bio-nanocomposite of Guar gum as a Promising Adsorbent for Reactive Green 19 Dye from Wastewater, <i>International journal of innovative research in technology</i>, 9(6), 55-70.</p>
7	<p>Jain, S.; Grover, R.; Vikram, A.; Goel, S. (2023) Cryptoverse and its Unflinching Cog of Fickleness, <i>Orissa Journal of Commerce</i>, 14(1), 1-14 https://doi.org/10.54063/ojc.2023.v44i01.01 (UGC CARE listed journal)</p>
8	<p>Goel, S. K.; Jain, S. (2022) Impact of Covid-19 on Corporate Social Responsibility: A Study of Indian IT Sector, <i>MANTHAN: Journal of Commerce and Management</i>, 9(2), 101-120 https://doi.org/10.17492/jpi.manthan.v9i2.922206</p>
9	<p>Singh, A. K.; Goel, S. K.; Jain, S. (2023) Rationality of Indian investors amid uncertain times during Covid-19, <i>Optimization: Journal of Research in Management</i>, 14(1), 32-40</p>
10	<p>Kaur, S.; Bhagat, H.; Kaur, P.; N. (2022) Phool: Journey from waste to wealth, <i>Arthavaan</i>, 5, 65-74.</p>
11	<p>Kochhar, S. K.; Soni, A.; Srivastava, S.; Gaur, V. (2022) A Simulation-based Approach to Evaluate and Regulate the Reputation Score of a Software Agent in E-Market, <i>International Journal of Next-Generation Computing</i>, 13(3), 577-607. https://doi.org/10.47164/ijngc.v13i3.788</p>

	(Web of Science Listed Journal)
12	Singh B.; Kumari, S.; Prasad, S. N. (2022) (R1985) Study the Effect of Modified Newtonian Force on the Restricted 3-body Configuration in Non-Linear Sense, Applications and Applied Mathematics: An International Journal (AAM), 17(2), 450-471 https://digitalcommons.pvamu.edu/aam/vol17/iss2/10 (Web of Science Listed Journal)
13	Prasad, S. N.; Saha, L. M.; Ansari, A. A. (2022) Measuring complexity and chaos in three species food chain system with the Beddington-Deangelis functional response, Bulletin of the Allahabad mathematical society, 37(1), 53-69.
14	Singh, B.; Kumari, S.; Prasad, S. N.; Ansari, A. A. (2023) Study the Non-Linear Stability of Non-Collinear Libration Point in the Restricted Three-Body Configuration When the Shapes of the Primaries are Taken as Heterogeneous and Finite-Straight Segment, Solar System Research, 57(3), 261–277. (Web of Science Listed Journal)
15	Sethi, G.; Yadav, A. S.; Singh C. (2022) Two ware-houses fuzzy inventory model for deteriorating items with ramp type demand and shortages, Journal of Management Information and Decision Science. 25(2), 1-22.
16	Sneha, S.; Pranav; Shivam; Neha, R.; Vashishtha, K.; Chauhan, B.; Misra, M.; Sharma, B. (2022) Post COVID-19 Long Term Effects Persisting More Than 6 Months in Various Age Groups of Indian Population, International Journal of Zoological Investigations, 8(2), 674-680. https://doi.org/10.33745/ijzi.2022.v08i02.082 (Web of Science Listed Journal)
17	Chauhan, B.; Misra, M.; Sharma, B. (2022) Re-characterization of Potential Zoonotic Trematode Parasite Parasitizing Intestine of Snakehead Fish, (Channa striata) Utilizing Multiple Sequence Alignment Tools (MSA), International Journal of Zoological Investigations, 8(2), 475-483. https://doi.org/10.33745/ijzi.2022.v08i02.059 (Web of Science Listed Journal)
18	Jain, R.; Aryama, P.; Chauhan, B.; Misra, M.; Saxena, T. (2022) Impact of Climatic Change on Respiratory Health, International Journal of Zoological Investigations, 8(2), 973-982. https://doi.org/10.33745/ijzi.2022.v08i02.115 (Web of Science Listed Journal)
19	Misra, M.; Chauhan, B.; Km, D.; Madhuri, A.; Sharma, B. (2022) PCR primer design for mitochondrial cox-1 gene from Clinostomum complanatum towards diagnosis, Bioinformation 18(9), 831-833.

	https://doi.org/10.6026/97320630018831 (Web of Science Listed Journal)
20	Chauhan, B.; Misra, M.; (2022) A Literature Review on Reckless and Hazardous Contraceptive Practices used since Primeval Times, Indian Journal of Natural Sciences, 13, 44976-44980. (Web of Science Listed Journal)
21	Chauhan, B.; Baweja, V.; Misra, M.; (2022) Role of A Evolutionary Conserved Hypothalamic Neuropeptide: Neuropeptide Y (NPY) in Release of Gonadotropin and Anterior Pituitary Hormones in Different Animal Groups, Indian Journal of Natural Sciences, 13, 48415-48423. (Web of Science Listed Journal)
22	Chauhan, B.; Misra, M.; Sharma, B. (2023) Phylogeny Based Taxonomy Validation and In Silico Primer Designing of Piscine Tapeworm, Senga lucknowensis using Mitochondrial (COX-1) Gene, International Journal of Zoological Investigations, 9(1), 561-565 https://doi.org/10.33745/ijzi.2023.v09i01.061 (Web of Science Listed Journal)
23	Thakur, M.; Bhardwaj, S.; Singh, J.; Senrunga, A.; Singh, J. (2023) Three Years of Covid-19 – A Review on India’s Journey through Different Variants and Waves, International Journal for Research Trends and Innovation, 8(1), 26-35.
24	Thakur, M.; Bhardwaj, S.; Singh, J. (2022) Monkeypox: Endemic to Epidemic A review of the current scenario of Monkeypox disease outbreak, International Journal for Research Trends and Innovation, 7(6), 1964-1969.
25	Kaur S, Jain T, and Kaur P. (2023) Effect of COVID 19 on mental health: A bibliometric analysis using scopus database. International journal of multidisciplinary trends, Vol. 5(5), pp. 26-45.
26	Kaur S, Bhagat H., Kaur P. and Nishant (2022) Phool: Journey from Waste to Wealth. Arthavaan. Vol. 5 Special Issue pp. 65-74
27	Rajesh Chaudhary, M.Sharma, S. Chhimwal and V. Kumar (2023). New additions to the checklist of Butterflies of Corbett Tiger Reserve, Uttarakhand, India. Bionotes, vol 25 (1-2): 69-74.

Book Chapters and Books

July 2022-April 2023

S. No.	Details of Paper
1	Aggarwal, S.; Mahajan, P.; Gupta, P.; Yadav, A. ; Dhawan, G.; Dhawan, U.; Yadav, A. K.; (2023) The bacterial communication system and its interference as an antivirulence Strategy, In Bacterial Survival in the Hostile Environment,

	Ed. Kumar, A.; Tenguria, S. Academic Press, pg 163-191. ISBN : 978-0-323-91806-0 https://doi.org/10.1016/B978-0-323-91806-0.00010-2
2	Mangla, Y.; Khanduri, P.; Gupta, C. K. (2022) Reproductive biology of angiosperms: Concepts and laboratory methods, Cambridge University Press, ISBN: 9781009160407
3	Samal, R., R.; Gautam, D.; Panmei, K.; Lanbilu, P.; Saya, L.; Gambhir, G.; Hooda, S.; Kumar, S. (2022) Evolution in graphene oxide-based materials characterization and modelling, In Reference Module in Materials Science and Materials Engineering, Elsevier, ISBN 978-0-12-803581-8. https://doi.org/10.1016/B978-0-323-96020-5.00017-0
4	Saya, L.; Gautam, D.; Hooda, S.; Gambhir, G.; Kumar, S. (2022) Modeling and characterization of guar-gum based nanocomposites for water purification, In Reference Module in Materials Science and Materials Engineering, Elsevier, ISBN 978-0-12-803581-8 https://doi.org/10.1016/B978-0-323-96020-5.00019-4
5	Sao, A. K.; Singh, J. P.; Sharma, B.; Munjal, S.; Sjarma, A.; Tomar, M.; Chowdhuri, A. (2022) CdS-SnO ₂ nanocomposite sensor for room temperature detection of NO ₂ gas, In Sensing Technology, Proceedings of ICST 2022, Ed. Suryadevara, N. K.; George. B.; Jayasundera. K. P.; Roy, J. K.; Mukhopadhyay, S. K. , (Lecture notes in Electrical Engineering 886), pg 283-289
6	Verma, N.; Joshi, R. (2022) An overview of information theoretic measures, In Advance Research in Physical & Chemical Sciences and Engineering, Ed. : S. K. Singh, R. K. Shukla and C. K. Dixit, MKSES publisher, Lucknow (India), ISBN: 978-93-91248-47-5
7	Kumar, U.; Gautam, R.; Sonker, R. K.; Yadav, B. C.; Chan, K. L.; Wu, C. H.; Huang, W. M. (2022) Micro and Nanofibers-Based Sensing Devices, In Sonker, R.K.; Singh, K.; Sonkawade, R. Smart Nanostructure Materials and Sensor Technology, Springer, Singapore. https://doi.org/10.1007/978-981-19-2685-3_5
8	Ghongade, S.D.; Waikar, M.R.; Sonker, R.K.; Chakarvarti, S.K.; Sonkawade, R.G. (2022). Gas Sensors Based on Hybrid Nanomaterial. In: Sonker, R.K.; Singh, K.; Sonkawade, R. (eds) Smart Nanostructure Materials and Sensor Technology. Springer, Singapore. https://doi.org/10.1007/978-981-19-2685-3_13
9	Kumar, S.; Sahgal, A. (2022) Advances in Mosquito Control: A Comprehensive Review, In Advances in Diptera, IntechOpen, Rijeka, Ed Kumar, S.

	https://doi.org/10.5772/intechopen.106378 ,
10	Samal, R. R., Lanbiliu, P.; Panmei, K.; Kumar, S. (2022) Mentha Piperita essential oil as an effective biopesticide against mosquitoes, In Agricultural research Updates, Vol. 43, Ed. Gorawala, P.; Mandhatri, S. Nova Science publishers, pg 207-233. ISBN: 979-8-88697-568-0
11	Solanki, R.; Anand, S.; Kapur, M. K. ; (2022) Biology of the B Lymphocyte, In An Interplay of Cellular and Molecular Components of Immunology, Ed. Singh, I. K.; Sharma, P. CRC Press, ISBN: 9781003286424 https://doi.org/10.1201/9781003286424
12	Dr. Deo Datta Aarya, Probability And Statistics, AG Publishing House, 2023
13	The book chapter titled Smart Nanostructure Materials and Sensor Technology (Perovskite-Based Gas Sensors) ISBN: 978-3-031-10868-6, International, Publisher: Springer, 2022
14	The book chapter titled The Applications of Biosensors and Biochips for Prognosis and Diagnosis of Diseases. 2023, 387-411. https://doi.org/10.1007/978-981-19-8501-0_12 International, Publisher: Springer, ISBN: 978-981-19-8501-0
15	Sunita Jetly; Satendra Singh; Archana Pandey; Shruti Banswal; Manisha Khatri - Human Adult T-Cell Leukemia Virus Type 1 (HTLV1) 2023 Emerging Human Viral Diseases, Springer (in Press)
16	Manisha*, Mangla Y* , Tandon R, Goel S. 2022 . Current Status of Chromosome-Based Gender determination in Seabuckthorn. In: <i>The Seabuckthorn Genome</i> . Sharma P. Springer-Nature, Switzerland. *Equal contribution. ISBN: 978-3-031-11275-1 (pp:67-78)
17	Reproductive Biology of Angiosperms: Concepts and Laboratory Methods Authors: Yash Mangla , Priyanka Khanduri, Charu Khosla Gupta Publisher: Cambridge University Press, UK ISSN: 978-1-009-16040-7
18	Kaur, S. (2023) . "Indian Foreign Policy" for the book Indian Foreign Policy (Publication- Selfpage Developer Pvt Ltd, Michigan, USA 2023) ISBN : 978-1-68576-421-0
19	Rajesh Chaudhary and Vinesh Kumar (2023) . Wildlife in and around Corbett Tiger Reserve. Niyogi Books Pvt. Ltd. . ISBN: 978-8196405366

Papers in Conference Proceedings

July 2022-April 2023

Sl. No.	Details of Paper
1	Jain, K., Bhatnagar, V., Kaur, S. (2023). Collective Behavior in Community-Structured Network and Epidemic Dynamics. In: Jain, S., Groppe, S., Mihindukulasooriya, N. (eds) Proceedings of the International Health Informatics Conference. Lecture Notes in Electrical Engineering, vol 990. Springer, Singapore. https://doi.org/10.1007/978-981-19-9090-8_16
2	Sharma, A.; Goel, N.; (2023) Effect of MSD viscosity and Coriolis force on Soret driven ferrothermohaline convection in an anisotropic darcy porous medium with LTNE: Linear stability analysis, Proceedings of 2 nd international conference on Mathematics in space and applied sciences, pg 85-92, Vol. 1, ISBN-978-81-947143-1-6.
3	Sharma, A.; Goel, N.; (2023) Study of lack of thermal equilibrium and anisotropic effects on double-diffusive ferroconvection in porous medium, Proceedings of 2 nd international conference on Mathematics in space and applied sciences, , pg 242-246, Vol. 1, ISBN-978-81-947143-1-6.
4	Vashishtha, S., Yogi, D.K., Singh, S. K., Kaur, R. & Agrawal, A. (April, 2023). IoT Based Landslide Detection System”, Ravneet Kaur and Anju Agrawal, In 2023 International Conference On “Interdisciplinary Research in Technology & Management” (IRTM-2023) (pp.-377-380) Deen Dayal Upadhyaya College, University of Delhi, New Delhi, India. University of Canberra, Australia and NIT Arunachal Pradesh, India.
5	Vibha Gaur , International Conference on Advances in IoT, Security with AI (ICAISA-2023), 25th March Presented, 24-25 march, 2023, at Deen Dayal Upadhyaya College, University of Delhi, New Delhi, India.
6	Rani S., Verma M, Raj V. Bhasker, Chowdhuri A. and Nimal A. T., SAW Multi Sensor Array for the Detection of Different Vapors by Applying Artificial Neural Network, Proceedings of 8th International Conference on Sensors Engineering and Electronics Instrumentation Advances (SEIA' 2022), 21 – 23 September 2022, Corfu Holiday Palace, Corfu, Greece, pp 91 – 92 [ISBN: 978-84-09-43854-9]
7	Yash Mangla, Priyanka Khanduri and Charu Khosla Gupta Reproductive Biology of Angiosperms-Concepts and Laboratory Methods

	Cambridge University Press 2022
8	Kaur S., and Kaur P. (2023, March) Green Entrepreneurship: A Case Study of “Mitti Cool Clay Creation” in International Conference on Sustainable Business Practices and Innovative Models held on 25 th March 2023 organized by Christ Deemed to be University. Pp. 49
9	Kaur S., and Kaur P. (2023, March) Effect of Covid 19 on Mental Health: A Bibliometric Analysis in International Conference on Social Determinants of Health Inequality & Health Inequity: Impact of Covid-19; Strategies for the Future held on 23-24 th February 2023. Pp. 44
10	Kaur S., and Yadav S. (2023, March) Impact of Covid 19 on Agricultural Production in International Conference on Social Determinants of Health Inequality & Health Inequity: Impact of Covid-19; Strategies for the Future held on 23-24 th February 2023. Pp. 44
11	Hanif, S., Das, R., Chavan, B., Shah, S., Bajpai, U., & Ahmed, S. (February, 2023). Phage-encoded lysins as promising antibacterials against uropathogenic <i>Escherichia coli</i> . <i>JAC-Antimicrobial Resistance</i> , Volume 5, Issue Supplement_1

Appendix X

Training Received by Faculty

Biomedical Science: (15)

1. Dr Satendra Singh attended faculty development programme Sericulture: Rearing And Its Application organized by Acharya Narendra Dev College, Shaheed Rajguru College of Applied Science for Women, Shri Guru Tegh Bahadur Khalsa College, Skill Enhancement Course Committee, University of Delhi from August 8-14, 2023.
2. Dr Rimpay Kaur Chowhan attended Evidencing benefits of probiotics on gut-brain axis in aging & neuro-degeneration at All India Institute of Medical Science (AIIMS) from July 20-21, 2023
3. Dr Archana Pandey attended Navigating Education in a Globalised World at EletsTechnomedia at Elets World Education Summit held from July 4-5, 2023.
4. Dr Rimpay Kaur Chowhan attended Navigating Education in a Globalised World at EletsTechnomedia at Elets World Education Summit held from July 4-5, 2023.
5. Dr Sunita Jetly attended Palliative care in Cancer organized by Palliative Care Volunteer Program with Dharamshila Rahat Medical Centre on March 25, 2023 and from November 12-13, 2022
6. Prof. Urmi Bajpai attended International conference Towards End TB: Achievements, Challenges and Future directions organized by DBT-THSTI, Faridabad from March 23-25, 2023.
7. Dr Rimpay Kaur Chowhan attended Computational Approaches to Protein Condensates organized by Dr. Monika Fuxreiter, University of Padov (The Protein Society) on January 24, 2023.
8. Prof. Urmi Bajpai attended ICBRAM Conference, Society for Bacteriophage Research and Therapy at Karnataka University from November 26-27, 2022.
9. Dr Archana Pandey attended 7th Annual International Conference on INSCR on “modulating the environment with microbes” conducted by Indian Network for soil contamination Research (INSCR) from November 8-11, 2022.
10. Dr Rimpay Kaur Chowhan attended 7th Annual International Conference on INSCR on “modulating the environment with microbes” conducted by Indian Network for soil contamination Research (INSCR) from November 8-11, 2022.
11. Dr Ritu Khosla attended 7th Annual International Conference on INSCR on “modulating the environment with microbes” conducted by Indian Network for soil contamination Research (INSCR) from November 8-11, 2022.
12. Prof. Urmi Bajpai attended a seminar on Communicable and Non-Communicable Diseases: Prevention, Cure, and Future Preparedness organized by Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, New Delhi, India from November 2-4, 2022.

13. Dr Archna Pandey attended a seminar on Communicable and Non-Communicable Diseases: Prevention, Cure, and Future Preparedness organized by Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, New Delhi, India from November 2-4, 2022.
14. Dr Rimpay Kaur Chowhan attended a seminar on Communicable and Non-Communicable Diseases: Prevention, Cure, and Future Preparedness organized by Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi, New Delhi, India from November 2-4, 2022.
15. Dr Rimpay Kaur Chowhan attended Hands-on training workshop about Animal models in teaching and research organized by Department of Zoology, Banaras Hindu University October 7-9, 2022

Botany: (04)

1. Dr Geetika Kalra attended Faculty development program at CCS, HAU Hisaron Hydroponics and Aeroponics Farming from 4 to 10 September 2023.
2. Dr Sumit Sahni attended Faculty development program at CCS, HAU Hisaron Hydroponics and Aeroponics Farming from 4 to 10 September 2023.
3. Dr Mandeep Kaur attended Faculty development program at CCS, HAU Hisaron Hydroponics and Aeroponics Farming from 4 to 10 September 2023.
4. Dr Mandeep Kaur attended Faculty development program at CCS, HAU Hisaron Organic Farming and Biofertilizers from 7 to 12 August 2023.
5. Dr Vineet Kumar Singh, Department of Botany has been resource person in Hands-on Training on SPSS: Basic Biostatistics using SPSS and Role of Statistical Software during the national workshop on statistical analysis of biological data in Zakir Hussain Delhi College 17/01/2022 to 21/02/2022.
6. Dr Vineet Kumar Singh, Department of Botany has been resource person in National Workshop on Biostatistics Basics at Ramjas College, University of Delhi, 13-14 August 2021.
7. Dr Vineet Kumar Singh, Department of Botany has been resource person in Summer Training on Techniques in Plant Science, at Shivaji College, University of Delhi, 2021.

Chemistry: (08)

1. Dr. Neeti Misra attended Online interdisciplinary two-week refresher course on 'Managing online classes and co-creating MOOCs 11.0' from February 07-21, 2022 organized by Teaching Learning Centre, Ramanujan College, University of Delhi under the aegis of PMMMNMTT.
2. Dr. Kavita Mittal, Dr Rashmi Thukral and Dr Pooja Bhagat Participated in IP Awareness/Training program under National Intellectual Property Awareness Mission organised by Intellectual Property Office, India on 27th August, 2022 through online mode.

3. Dr. Kavita Mittal and Prof Rashmi Thukral Attended webinar on QUILLBOT – awareness program organised by Acharya Narendra Dev College Library, University of Delhi, on September 29, 2022.
4. Dr. Kavita Mittal Participated in One day Hands On Workshop on Forensics Science, organized by the Department of Biomedical Science, Acharya Narendra Dev College, University of Delhi on April 12, 2023, under the aegis of IQAC and DBT STAR College Scheme.
5. Dr. Neeti Misra Successfully completed One-Week Online National Faculty Development Program “Python:Essentials, Programming and Analytics” jointly organized by University of Delhi and Guru Angad Dev Teaching and learning centre, SGTB, Khalsa College, DU, under the aegis of PMMMNMNT of Ministry of Education from 27th October-3rd November 2022.
6. Dr Rashmi Thukral Attended One week online National FDP For Building Leadership organised by GAD TLC,SGTB Khalsa College,D.U,under PMMMNMNTT of Ministry of Education from 14th April-20th April 2022.
7. Dr Rashmi Thukral Successfully completed one week online National Faculty Development Program on SAFER AND GREENER CHEMISTRY LABS organised by GAD TLC,SGTB Khalsa College,D.U under PMMMNMNTT of MOE from 19th July-25th July 2022.
8. Dr Rashmi Thukral Attended International-Online Conference on ‘Emerging Trends in Higher Education’ organised by NPTC Group of Colleges UK,and GAD TLC,SGTB Khalsa College,D.U under PMMMNMNTT of MOE from 28th March-29th March 2023.

Computer Science: (03)

1. Ms. Priyanka Sharma attended Three months online CSEDU Program (Every weekend) on “Effective Teaching of Machine Learning” from IIT Delhi from 25th Aug ust-December 03, 2022.
2. Ms. Gunjan Rani attended Three months online CSEDU Program (Every weekend) on “Effective Teaching of Machine Learning” from IIT Delhi from 25th Aug ust- December 03, 2022.
3. Ms. Nishu Singh attended Three months online CSEDU Program (Every weekend) on “Effective Teaching of Programming in Python” from IIT Delhi from 25th Aug ust-December 03,2022.

Electronics: (13)

1. Prof. Anju Agrawal attended Online Faculty Development Programs (FDPs) / Refresher Coursesfor capacity building towards NEP-2020 based Skill Enhancement Courses, Big Data Analytics (FDP-106), organised by University of Delhi in collaboration with GAD-TLC, a Centre under PMMMNMNTT, Ministry of Education, Government of India held from November 4 2022 to November 11, 2022.
2. Dr. Ravneet Kaur attended Online Faculty Development Programs (FDPs) / Refresher Coursesfor capacity building towards NEP-2020 based Skill Enhancement Courses, Big

Data Analytics (FDP-106), organised by University of Delhi in collaboration with GAD-TLC, a Centre under PMMMNMTT, Ministry of Education, Government of India held from November 4 2022 to November 11, 2022.

3. Dr. Monika Bhattacharya attended Online Faculty Development Programs (FDPs) / Refresher Courses for capacity building towards NEP-2020 based Skill Enhancement Courses, Big Data Analytics (FDP-106), organised by University of Delhi in collaboration with GAD-TLC, a Centre under PMMMNMTT, Ministry of Education, Government of India held from November 4 2022 to November 11, 2022.
4. Ms. Gauri Ghai attended Online Faculty Development Programs (FDPs) / Refresher Courses for capacity building towards NEP-2020 based Skill Enhancement Courses, Big Data Analytics (FDP-106), organised by University of Delhi in collaboration with GAD-TLC, a Centre under PMMMNMTT, Ministry of Education, Government of India held from November 4 2022 to November 11, 2022.
5. Prof. Anju Agrawal attended Online Faculty Development Programs (FDPs) / Refresher Courses for capacity building towards NEP-2020 based Skill Enhancement Courses, Python: Essentials, Programming and Analytics (FDP-102), organised by University of Delhi in collaboration with GAD-TLC, a Centre under PMMMNMTT, Ministry of Education, Government of India held from October 27, 2022 to November 3, 2022.
6. Dr. Monika Bhattacharya attended Online Faculty Development Programs (FDPs) / Refresher Courses for capacity building towards NEP-2020 based Skill Enhancement Courses, Python: Essentials, Programming and Analytics (FDP-102), organised by University of Delhi in collaboration with GAD-TLC, a Centre under PMMMNMTT, Ministry of Education, Government of India held from October 27, 2022 to November 3, 2022.
7. Ms. Gauri Ghai attended Online Faculty Development Programs (FDPs) / Refresher Courses for capacity building towards NEP-2020 based Skill Enhancement Courses, Python: Essentials, Programming and Analytics (FDP-102), organised by University of Delhi in collaboration with GAD-TLC, a Centre under PMMMNMTT, Ministry of Education, Government of India held from October 27, 2022 to November 3, 2022.
8. Dr. Monika Bhattacharya attended MATLAB Workshop for Faculty Members organised by FOSS Club, Department of Computer Science, Acharya Narendra Dev College, University of Delhi on October 12 and October 17, 2022.
9. Prof. Anju Agrawal attended Virtual Mini Colloquia (MQ) on 75th Anniversary of Transistor Invention” organised by IEEE EDS Delhi Chapter (New Delhi, India) from August 22, 2022 to August 29, 2022.
10. Dr. Ravneet Kaur attended Virtual Mini Colloquia (MQ) on 75th Anniversary of Transistor Invention” organised by IEEE EDS Delhi Chapter (New Delhi, India) from August 22, 2022 to August 29, 2022.

11. Dr. Monika Bhattacharya attended Virtual Mini Colloquia (MQ) on 75th Anniversary of Transistor Invention” organised by IEEE EDS Delhi Chapter (New Delhi, India) from August 22, 2022 to August 29, 2022
12. Mr. Dinesh Kumar attended Virtual Mini Colloquia (MQ) on 75th Anniversary of Transistor Invention” organised by IEEE EDS Delhi Chapter (New Delhi, India) from August 22, 2022 to August 29, 2022.
13. Ms. Gauri Ghai, attended Virtual Mini Colloquia (MQ) on 75th Anniversary of Transistor Invention”

Physics: (08)

1. Dr. V. Bhasker Raj and Prof. Arijit Chowdhuri were Resource Persons for National Workshop on Career and Skill Enhancement for Non-teaching Staff organised by Acharya Narendra Dev College from 15 – 21 September 2022.
2. Dr. V. Bhasker Raj and Prof. Arijit Chowdhuri were Resource Persons and held other positions at Hands-on training Workshop on Semiconductor Device Fabrication organized by Miranda House, University of Delhi, in collaboration with CIIDRET, UDSC and DSSEED, University of Delhi. The workshop was organized from 20 March – 3 April 2023 under the aegis of 100 days Skill Festival of University of Delhi.
3. Dr. Ranjeet Singh completed one week long FDP on Blended Learning – Concepts and Tools from TLC, Ramanujan College under the aegis of DoE, PMMMMNMTT initiative. The FDP was held from 01 – 07 July 2023.
4. Dr. Ranjeet Singh presented a paper titled ‘Non-local regime of Relativistic Weibel Instability in the presence of a LASER pump in Plasma’ at the 3rd International Conference on Plasma Theory and Simulations (PTS 2023) organized from 21 – 23 September 2023 at Jawahar Lala Nehru University, New Delhi.
5. Dr. Satya Prakash Yadav and Dr. Pradeep Gupta completed two week long FDP on PHYSICS from TLC, Ramanujan College under the aegis of DoE, PMMMMNMTT initiative. The FDP was held from 28 July -11 August 2022.
6. Dr Dinesh Kumar Verma and Dr. Pradeep Gupta completed One-Week Online National Faculty Development Program “Python: Essentials, Programming and Analytics” from 27 October – 03 November 2022 jointly organized by University of Delhi and Guru Angad Dev Teaching Learning Centre, SGTB Khalsa College, University of Delhi under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMMNMTT) of Ministry of Education.
7. Dr. V. Bhasker Raj completed One-Week National Faculty Development Program from 17 – 23 July 2023 organized by University of Delhi (Skill Enhancement Course Committee) in collaboration with Daulat Ram College, DU (Department of Physics) and Guru Angad Dev Teaching Learning Centre, a Centre under PMMMMNMTT, Ministry of Education, Government of India.

8. Mr. Pawan Kumar completed two week interdisciplinary Refresher Course on Research Methodology and Data Analysis” from 28th July – 10th August, 2023 from TLC, Ramanujan College under the aegis of DoE, PMMMMNMTT initiative.

Zoology: (12)

1. Dr. Sweety Shrimali attended Professional Development Programme on ‘Implementation of NEP2020 for University and College Teachers’ organized by Indira Gandhi National Open University, New Delhi from September 09-17, 2022.
2. Dr. Aparna Sharma attended UGC-Approved Short-Term Professional Development Programme on ‘Implementation of NEP-2020 for University and College Teachers’ organized by INDIRA GANDHI NATIONAL OPEN UNIVERSITY Under PanditMadan Mohan Malaviya National Mission on Teachers and Teaching from October 27, 2020 to November 05, 2022.
3. Dr Vineet Girdharwal, Dr Shrankhla and Ms. Bhumika Chauhan attended Skill Development for sustainable Aqauculture organized by Department of Zoology, University of Delhi from June 19-25, 2023.
4. Mr Ravinder Kumar Sagar, Dr Neelgagan Singh, Dr Rahul Dev, Mr Vineet Girdharwal and Dr Shrankhla attended One-week National Faculty Development Programme(FDP) *Sericulture: Rearing and Its Application*” organized by Acharya Narendra Dev College, Govindpuri, Kalkaji, New Delhi-110019 in collaboration with Skill Enhancement Course Committee (University of Delhi), Department of Zoology (University of Delhi), Shaheed Rajguru College of Applied Sciences for Women (University of Delhi), GAD-TLC, SGTB Khalsa College, Ministry of Education, PMMMMNMTT, Govt. of India and Atma Ram Sanatan Dharma College, University of Delhi August 8-14, 2023.
5. Dr. Aparna Sharma attended IP Awareness/Training Program under National Intellectual Property Awareness Mission (online) on 27 August, 2022 Organized by Intellectual Property Office, India.
6. Dr Rahul Dev attended 7th Annual International Conference on INSCR on “modulating the environment with microbes” conducted by Indian Network for soil contamination Research (INSCR) from November 8-11, 2022.

Appendix XI

Exhibitions/seminars/training courses conducted

Biomedical Science: (12)

1. Organized Seminar on “Quality Control of Variant Peptides in Proteogenomics-Catching the (Un)Usual Suspects” on July 04, 2023.
2. Organized Cathexis 2023: Reproductive Health on April 13, 2023.
3. One day hands-on-workshop on Forensics Science was organized on April 12, 2023.
4. Department organized Career Counselling Series: Panel Discussion With Alumni on April 11, 2023.
5. Co-organized One day workshop on Quantitative Microbial Ecology: Opportunities and ways ahead at Acharya Narendra Dev College on February 04, 2023.
6. Hands-on training workshop was organized on “Phage Biology- Discovery and Analysis and Webinars on Bacteriophage Therapy” at Acharya Narendra Dev College from January 20-25, 2023.
7. Co-Organized a workshop on ‘How to Read Scientific Literature’ for the students on October 14, 2022.
8. Co-Organized an Outreach Workshop on “Cell and Molecular Biology Techniques” on October 12-13, 2022.
9. Co-Organized a hands-on workshop on Anti- Microbial Resistance and foldscope titled “Superheroes against superbugs” on October 11, 2022.
10. The Department has organized a National hands-on workshop on “*PCR for Diagnostics and Gene Expression Analyses* from September 27-29 2022.
11. Co-Organized a National workshop on Digital & Financial Skill enhancement for Non-teaching staff from September 15-21, 2022.
12. Co-Organized a National workshop on Skill enhancement of Non-teaching staff (NWSENS-2022) from July 13-20, 2022.

Botany: (03)

1. Department organized a Workshop on Mushroom Culture techniques for the students of Shivaji College, University of Delhi on July 13, 2022
2. Organized A hands-on workshop on Superheroes against Superbugs for the students to familiarize them with Anti-microbial resistance and Foldscope on October 11, 2022.
3. A workshop on ‘How to Read Scientific Literature’ for the students was organized on October 14, 2022

Chemistry: (06)

1. Organized a five day Bootcamp on ‘V-Lab Development 2.2’ under the aegis of DBT STAR College Scheme from April 24-28, 2023.

2. Organized an Online workshop on 'IPR- Patents & Designs filing' in association with Rajiv Gandhi National Institute for Intellectual Property Management (RGNIPM) under National Intellectual Property Awareness Mission (NIPAM) on August 27, 2022.
3. Organized a 400 hours course on 'Web Developer' as the 'Skill Hub Initiative' under Pradhan Mantri Kaushal Vikas Yojana 3.0 (PMKVY 3.0) for school dropouts and out-of-education candidates from March 16, 2022-November 21, 2022.
4. Organized a 60 hours value added course on 'Research Methodology' for Physical Science students from August 30, 2022-November 19, 2022.
5. Organized a 60 hours value added course on 'Tools and Techniques in Biological Sciences' for Life Science students August 29, 2022-November 11, 2022.
6. Organized a 40 hours certificate course on Basics of Research Methodology for Physical Science and Life Science students of first year from January 05, 2023 -17 June 2023.

Computer Science: (04)

1. Two Days Workshop under FOSS club on "MATLAB" on 12th October 2022 and 17th October 2022 " by Mr. Manoj Kumar , Sr. Application Engineer at DesignTech Systems Pvt. Ltd., New Delhi.
2. Six days workshop on "Revisit Bootcamp 1.1 for V-Lab Development" on 9th January 2023 to 14th Jan 2023 by Mr. Pankaj Sahu and Mr. Shahnwaz Khan, Students of Acharya Narendra Dev College, Delhi University.
3. Five Days workshop on "V-Lab Development (Building Block of Simulator)" held on 24th April 2023 to 28 April 2023 by Mr. Vaibhav Thapiyal, Mr. Vibhor Gupta, Mr. Pankaj Sahu, Students of Acharya Narendra Dev College, Delhi University.
4. Five Days workshop on "V-Lab Development 2.2" held on 24th April 2023 to 28 April 2023 by the students of Acharya Narendra Dev College, Delhi University. Mr. Vaibhav Thapiyal, Mr. Vibhor Gupta, Mr. Pankaj Sahu,

Electronics :(05)

1. Department has organised 5 days workshop on Machine Learning with Python Interfacing in technical collaboration with industry partner Brain Mentors Pvt. Ltd. from September 25-29, 2023.
2. Department has organized a One-day workshop on 3D Printing Technology on September 23, 2023.
3. Department has organized a Workshop on Hologram Recording and Reconstruction on February 04, 2023
4. Department has organized One Day offline Workshop on Arduino and Sensor Interfacing on January 31, 2023.
5. Hands-on Workshop was organized on Arduino and Sensor Interfacing in technical collaboration with industry partner Touch Techno Pvt. Ltd. September 10, 2022

Physics: (05)

1. Dr. V. Bhasker Raj and Prof. Arijit Chowdhuri were involved in organization of Hands-on training Workshop on Semiconductor Device Fabrication organized by Miranda House, University of Delhi, in collaboration with CIIDRET, UDSC and DSSEED, University of Delhi. The workshop was organized from 20 March – 3 April 2023 under the aegis of 100 days Skill Festival of University of Delhi.
2. One day seminar on ‘Hydrelectric cell the best option to do away global warming and green hydrogen generation by water splitting’ on 21 March 2023 by Dr. R.K. Kotnala ex-Chairman NABL, Raja Ramanna Fellow, Department of Atomic Energy and Chief Scientist, CSIR-National Physical Laboratory, New Delhi, INDIA
3. One day seminar on ‘High level Overview of Semiconductor Industry’ on 09 November 2022 by Dr. Sujit Kumar, Scientist Interuniversity Microelectronics Centre, Leuven BELGIUM. rganized an educational visit on 31 May 2023 for 09 students to Dr. Anjali Sharma Kaushik’s
4. One day seminar on ‘Quantum Communication’ on 09 November 2022 by Mr. Siddhartha K. Das, Nanoelectronic Systems, Technical University of Dresden, GERMANY.
5. One day seminar on ‘High Energy Physics and Artificial Intelligence’ on 14 October 2022 by Dr. Ramakrishna Sharma, CERN, Geneva, SWITZERLAND

Zoology: (10)

1. Co-Organized a Workshop on Anti-Microbial Resistance and foldscope: A hands on workshop on Anti-Microbial Resistance and foldscope was organised under the aegis of DBT Star Scheme by the departments of Botany, Zoology and Biomedical Science. Dr Anupma Harshal W. , Superheroes against Superbugs Fellow, Woman in STEM was the resource person. Students also learnt how to make and use foldscope.
2. 3rd International Symposium on Ciliate Biology (ISCB 2022): In commemoration of Centenary Celebrations, Acharya Narendra Dev College and Maitreyi College, in collaboration with INSCR (Indian Network for Soil Contamination Research) organized an online 3rd International Symposium on Ciliate Biology 2022 (ISCB 2022). Thirteen Speakers of International repute enlightened the gathering about their research work.
3. One-week Revisit Bootcamp 1.1 for V-Lab Development: This workshop was organized for the first year and second year students of all streams of the college. The bootcamp was mainly for those students who has shown interest in to be part of the V-Lab team, and for developing V-labs of their respective courses in future. This workshop exemplifies Peer to Peer Learning.
4. Five day Bootcamp on ‘V-Lab Development 2.2 and Bootcamp on ‘V-Lab Development (Building Blocks of Simulator)’’: Organized a five day Bootcamp on ‘V-Lab Development 2.2’ and ‘V-Lab Development (Building Blocks of Simulator)’ under the aegis of DBT STAR College Scheme. This workshop was organized for the First and

Second year students of all streams of the college. The resource persons were Mr Vaibhav Thapliyal. Mr. Shahnawaz Khan and Mr. Pankaj Sahu who were final year students of B.Sc.(H) Physics, B.Sc.(H) CS and B.Sc.(P) Physical Science with CS respectively from the college.

5. 7th International Conference of National Soil Contamination and Research (INSCR 2022) Modulating the Environment with Microbes: Organized by Acharya Narendra Dev College, DU in collaboration with Deen Dayal Upadhyaya College (DU), Gargi College (DU), Kirori Mal College (DU), PG Department of Zoology, Magadh University (MU), Ramjas College (DU), Sri Venkateswara College (DU), Sri Guru Tegh Bahadur Khalsa College (DU), C.M.P. College (AU), Bhaskaracharya College of Applied Sciences, Shivaji College, Miranda House, KIIT Bhubenswar, Devbhoomi, U.K., Kolhan University, Jharkhand, PhiXgen Pvt. Ltd., Gurugram and College of Commerce, Arts & Science, Patna. The Conference was attended by more than 500 participants.
6. An online workshop on 'IPR- Patents & Designs filing': The College organized an online workshop on 'IPR- Patents & Designs filing' in association with Rajiv Gandhi National Institute for Intellectual Property. Kumar Raju was the resource person. August 27, 2022.
7. Summer Internship organized by Microbial Technology Laboratory, Acharya Narendra Dev College University of Delhi: Basic Techniques of Laboratory attended by Beenit Kushwaha (Galgotia's University); Tenure: 1 month from 4th July to 4th August 2023.
8. Workshops on 'Genomics, Metagenomics and Bioinformatics in Microbial Ecology' was organized with the support of International Microbiological Societies, ISME, International Society of Microbial Ecology and FEMS, Federation of European Microbiological Societies on November 07, 2022
9. Workshops on 'Art of Scientific Writing and Communication' Ecology' was organized with the support of International Microbiological Societies, ISME, International Society of Microbial Ecology and FEMS, Federation of European Microbiological Societies on November 08, 2022.
10. Department organized 60 Hour Value Addition Course on 'Tools and Techniques in Biological Sciences' for Life Science students from August August 29, 2022-November 11, 2022. This course was conducted by PMRF of IITD.

Appendix XII

A. Outreach activities - College Level

Bani School Innovation Camp II (BaSIC V) and Biar Initiative: A School Outreach Program For Enrichment II (BI&SCOPE II)

Organizing Team: **Prof. Rup Lal, Fellow-Indian National Science Academy; Prof. Sukanya Lal, PhiXgen Pvt. Ltd. and various faculty members and UG students from different colleges of University of Delhi, Dr. Shailly Anand from Deen Dayal Upadhyaya College; Dr. Princy Hira and Dr. Ritu Dhingra from Maitreyi College; Dr. Pushp Lata from Dept. of Zoology; Dr. Charu Dogra Rawat, Ramjas College; Dr. Gauri Garg Dhingra and Dr. Utkarsh Sood from Kirori Mal College; Dr. Kiran and Dr. Shekhar Nagar from Deshbandhu College; Dr. Meghali, Shivaji College**

Date: **February 13-14, 2023**

Number of Participants: **41**

Under INSA Outreach Program and DU Centenary Celebrations: Under INSA outreach program, "Lectures by INSA Fellows/Young scientists/teacher awardees to young students and teachers of schools and colleges in the remote/rural areas," in which INSA-fellows can deliver lecture to motivate and ignite young minds, Prof. Rup Lal, Fellow INSA, INSA Senior Scientist, Acharya Narendra Dev College, University of Delhi selected Govt. Senior Secondary School (GSSS), Bani and Biar located in the Hamirpur district of Himachal Pradesh. In the year 2016, Prof. Lal and his PhD students collaborated with teachers and undergraduate students from Ramjas College, University of Delhi (DBT star college project) and together adopted GSSS, Bani, Hamirpur, Himachal Pradesh on December 23, 2016 and organized Bani School Innovation Camp I (BaSIC, 2016) on December 23rd -24th 2016. BaSIC II was then organised on March 7th, 2018; BaSIC III on October 15th 2018; and BaSIC IV on October 21-22nd 2019. In 2019, we conducted same program in another nearby school Government Senior Secondary School, Biar named as **Biar Initiative: A School Outreach Program For Enrichment I (BI&SCOPE I)**. All the four programs were a major success as seen from the feedback obtained. In continuation of these efforts, a fifth camp was organized in commemoration of Centenary Celebrations of University on February 13th, 2023 and was called Bani School Innovation Camp V or BaSIC V and BI&SCOPE II on 14th February, 2023 to motivate and ignite young minds of Govt. Senior Secondary School (GSSS), Bani and Biar located in the Hamirpur District of Himachal Pradesh. This camp was organized for students of classes VI-XII on February 13-14th, 2023 with an aim of uplifting the rural areas through propagation of scientific thoughts, promotion of student-teacher interactions and development of communication skills.

As mentioned, these outreach initiatives were started in 2016 to connect with children and society by organizing Innovation Camps for kids in rural areas, science in general and

microbiology in particular are promoted under these. Two of these programs are the Bani and Biar Initiatives. The program was conducted under the leadership of Prof. Rup Lal, Fellow-Indian National Science Academy; Prof. Sukanya Lal, PhiXgen Pvt. Ltd. and various faculty members and UG students from different colleges of University of Delhi, Dr. Shailly Anand from Deen Dayal Upadhyaya College; Dr. Princy Hira and Dr. Ritu Dhingra from Maitreyi College; Dr. Pushp Lata from Dept. of Zoology; Dr. Charu Dogra Rawat, Ramjas College; Dr. Gauri Garg Dhingra and Dr. Utkarsh Sood from Kirori Mal College; Dr. Kiran and Dr. Shekhar Nagar from Deshbandhu College; Dr. Meghali, Shivaji College. In addition, 41 UG students from University of Delhi accompanied and conducted two successful outreach programs at Bani and Biar.

The event was organized by keeping in mind to not only deliver lectures under the aegis of INSA but also included activities of DBT star college and AMI. A total of 13 teaching modules were designed to raise interest in school children and teachers in the field of science and technology. While the school students were the main target, the camp also ignited minds of teachers who serve as pillars of the school.

Biomedical Science :(20)

1. Prof Urmi Bajpai delivered a talk on “Bacteriophages: the dark matter of the biospheres” in a symposium on “Data Driven Approaches to Understand Biological Systems. At the CSIR-IGIB, Mathura Road on April 29, 2023.
2. Prof Urmi Bajpai delivered a talk on “Unleashing Potential, Breaking Boundaries” on the International Day for Women & Girls in Science at the CSIR, HRDG, Pusa on February 10, 2023.
3. Prof Urmi Bajpai delivered a talk on “Bacteriophages and Lysin Banks to Combat Antibacterial Drug Resistance”. At the 63rd annual international conference of Association of Microbiologists (AMI) of India. at the MDU, Rohtak on February 4, 2023.
4. Prof Urmi Bajpai delivered a talk on “Importance of Bacteriophage and Lysin Banks to Mitigate the Silent Pandemic” at the 3rd International Conference on Bacteriophage Research and Antimicrobial Resistance (ICBRAR) on November 27, 2022.
5. Prof Urmi Bajpai was Co-panelist with Prof Herman Barkema, University of Calgary, in an online panel discussion on “Antimicrobial Resistance & One Health: Stakes involved and the way forward”, organized by IBLOT, EBPMN and TechInvention Pvt Ltd. On November 18, 2022.
6. Dr Sunita Jetly organized Free Cancer Awareness Program at various locations of Delhi & Uttar Pradesh, including:
 - Jal Vayu Vihar, Sector 2, Noida
 - Luxmi Narayan Mandir Sector 56, Noida
 - R.G. Residency Sector 120, NOIDA
 - Institute of Chartered Accountants, C56,/9A Sector 62 NOIDA
 - Prateek Stylome, Sector 45, NOIDA

- Sector 26, NOIDA
 - RassolpurDasna, UP
 - Hyde Park, Sector 78, NOIDA
 - Supreme Court
 - NRI Residency Sector 45 NOIDA
 - MLA office oppAurobindomarket ,Hauz khas
7. Dr Sunita Jetly organized Thalassaemia Awareness Program at various locations of Delhi & Uttar Pradesh, including:
 - Luxmi Narayan Mandir, Sector 56, Noida
 - Shyama Prasad Sarvodaya Vidyalaya Chitranjan Park Delhi
 - Ganga Ram Hospital (invited by Thalassaemic India 35 years Old NGO for thalassaemia to showcase our work)
 - Ramjas College
 - Rajguru college of Applied Sciences for Women
 8. Dr Satendra Singh was resource person in the National Workshop on Career and Skill Enhancement for Non-Teaching Staff from September 15-21, 2022.
 9. Dr Satendra Singh was resource person in the National Workshop on Skill Enhancement for Non-Teaching Staff from July 13-20, 2022.
 10. Dr Rimpay Kaur Chowhan Co-chaired a session in the 3rd International Symposium on Ciliate Biology (ISCB-2022) on November 8, 2023.
 11. Dr Rimpay Kaur Chowhan was Resource person in the National Workshop on Career and Skill Enhancement for Non-Teaching Staff from September 15-21, 2022.
 12. Dr Rimpay Kaur Chowhan was resource person in the National Workshop on Skill Enhancement for Non-Teaching Staff from July 13-20, 2022.
 13. Dr Ritu Khosla was Resource person in the National Workshop on Career and Skill Enhancement for Non-Teaching Staff from September 15-21, 2022.
 14. Dr Ritu Khosla was Resource person in the National Workshop on Skill Enhancement for Non-Teaching Staff from July 13-20, 2022.
 15. Dr Ritu Khosla was Resource person in the National hands-on workshop on “PCR for Diagnostics and Gene Expression Analyses” from September 27-29, 2022.
 16. Dr Deepshikha was Resource person in the National Workshop on Career and Skill Enhancement for Non-Teaching Staff from September 15-21, 2022.
 17. Mr Vinesh Kumar was Resource person in the National Workshop on Skill Enhancement for Non-Teaching Staff from July 13-20, 2022.
 18. Dr Archana Pandey was Resource person in the National hands-on workshop on “PCR for Diagnostics and Gene Expression Analyses” from September 27-29, 2022.
 19. Dr Sunita Jetly delivered a talk on “Cancer Prevention”, under Jan Jagriti Foundation, Noida, at community centre , Jal Vayu Vihar Noida on September 23, 2023.

20. Dr Sunita Jetly delivered a talk on “Holistic Health” invited by mera Sahar on the occasion of Pre Independence Celebrations Day, joint women programmed at A276, sector 31, Noida. UP on August 14, 2023.

Botany: (03)

1. Outreach Workshop on “Cell and Molecular Biology Techniques”: In commemoration of centenary celebrations of University of Delhi, Acharya Narendra Dev College organized an Outreach Workshop on *Cell and Molecular Biology Techniques* under the patronage of Prof. Ravi Toteja, Principal, ANDC. 24 B.Sc students and 26 M.Sc students from GD Goenka University, Gurugram, Delhi were given complete hands-on training on cell and molecular biological techniques like Preparation of Competent cells and Transformation Experiment, making of mitosis slides, plasmid DNA isolation, polymerase chain reaction, agarose gel electrophoresis and restriction mapping October 12-13, 2022.

Visits:

1. Visit to Sanjay Van: Dr Charu K Gupta, Dr Vineet K Singh, Dr Mandeep Kaur and Dr Anita Thakur took BSc (H) Botany to Sanjay Van and Neela Hauz to study the ecology of the system on 25th April 2023
2. Visit to Tuglakabad Biodiversity Park: Dr Charu K Gupta, Dr Vineet K Singh and Dr Sumit Singh had taken 45 students from the department for a plantation drive on World Environment Day 5th June 2023

Chemistry: (01)

1. Under Community outreach activity five workshops on ‘Safer And Greener Chemistry Lab’ were organised in five schools in collaboration with GAD TLC SGTB Khalsa College by Department Of Chemistry A.N.D College under aegis of IQAC and DBT Star College Scheme (Co-ordinator and resource person-Dr Rashmi Thukral) on 28th-31th Jan,2023

Electronics: (29)

1. Dr. Ravneet Kaur participated as Resource Person in a five-day workshop on “Development of Learning Outcomes based activities in Biology, Chemistry, Physics and Mathematics at Secondary Stage (Level II).” held at DESM, NCERT, New Delhi from August 21, 2023 to August 25, 2023.
2. Dr. Ravneet Kaur participated as Resource Person in a five-day workshop on “Online Course in Teaching of Science at Middle Stage.” held at DESM, NCERT, New Delhi from July 31, 2023 to August 4, 2023.
3. Dr. Ravneet Kaur participated as Resource Person in a five-day workshop on “Development of Audio Video Resources based on Laboratory Manual in Science at Upper Primary Stage.” held at DESM, NCERT, New Delhi from July 10, 2023 to July 14, 2023.
4. Dr. Ravneet Kaur participated as Resource Person in a five-day workshop on “Development of Audio Video Resources based on Laboratory Manual in Science at Upper Primary Stage” held at DESM, NCERT, New Delhi from February 27, 2022 to

March 03, 2023.

5. Prof. Amit Garg, Prof. Anju Agrawal, Dr. Ravneet Kaur, Ms. Gauri Ghai, Dr. Monika Bhattacharya and Mr. Dinesh Kumar served as Resource Person in National Workshop on Skill Enhancement of Non-Teaching Staff (NWSSENS-2022) Organised by Acharya Narendra Dev College from July 13 to July 20, 2022.
6. Prof. Anju Agrawal and Dr. Ravneet Kaur served as Judge for the Inter-School S.T.E.M. Fest- Robotron'23, Delhi Public School, Mathura Road, August 11, 2023.
7. Dr. Ravneet Kaur chaired a session in International Conference on Advances in IoT, Security with AI (ICAISA-2023), Deen Dayal Upadhyaya College, University of Delhi, Sector-3, Dwarka on March 24, 2023.
8. Prof. Anju Agrawal and Dr. Ravneet Kaur trained Raghav Aggarwal and Jaysal Manchanda of Delhi Public School, Sector 12, New Delhi for duration of two months (July 1, 2023- August 31 2023 on Portfolio Website Development.
9. Dr. Ravneet Kaur and Dr. Monika Bhattacharya served as Expert Reviewer for IT related Vocational Education courses at Bhartiya Shiksha Board (BSB).
10. Prof. Anju Agrawal chaired a session in the 3rd International Symposium on Ciliate Biology (ISCB-2022) organized by Acharya Narendra Dev College and Maitreyi College, University of Delhi under the aegis of DBT STAR College Scheme and IQAC held on November 8, 2022.
11. Resource Person in One Week National Workshop on Career and Skill Enhancement for Non-teaching Staff organised by Acharya Narendra Dev College from September 15 to September 21, 2022.
12. Prof. Amit Garg served as Resource Person in National Workshop on Skill Enhancement of Non-Teaching Staff (NWSSENS-2022) Organised by Acharya Narendra Dev College from July 13 to July 20, 2022.
13. Prof. Anju Agrawal served as Resource Person in National Workshop on Skill Enhancement of Non-Teaching Staff (NWSSENS-2022) Organised by Acharya Narendra Dev College from July 13 to July 20, 2022.
14. Dr. Ravneet Kaur served as Resource Person in National Workshop on Skill Enhancement of Non-Teaching Staff (NWSSENS-2022) Organised by Acharya Narendra Dev College from July 13 to July 20, 2022.
15. Ms. Gauri Ghai served as Resource Person in National Workshop on Skill Enhancement of Non-Teaching Staff (NWSSENS-2022) Organised by Acharya Narendra Dev College from July 13 to July 20, 2022.
16. Dr. Monika Bhattacharya served as Resource Person in National Workshop on Skill Enhancement of Non-Teaching Staff (NWSSENS-2022) Organised by Acharya Narendra Dev College from July 13 to July 20, 2022.
17. Mr. Dinesh Kumar served as Resource Person in National Workshop on Skill Enhancement of Non-Teaching Staff (NWSSENS-2022) Organised by Acharya Narendra Dev College from July 13 to July 20, 2022.

18. Prof. Anju Agrawal acted as a judge in the Inter-School S.T.E.M. Fest- Robotron'23, Delhi Public School, Mathura Road, August 11, 2023.
19. Dr. Ravneet Kaur acted as judge for the Inter-School S.T.E.M. Fest- Robotron'23, Delhi Public School, Mathura Road, August 11, 2023.
20. Dr. Ravneet Kaur chaired a session in International Conference on Advances in IoT, Security with AI (ICAISA-2023), Deen Dayal Upadhyaya College, University of Delhi, Sector-3, Dwarka on March 24, 2023.
21. Prof. Anju Agrawal trained Raghav Aggarwal and Jaysal Manchanda of Delhi Public School, Sector 12, New Delhi on Portfolio Website Development for two months (July 1, 2023-August 31, 2023).
22. Dr. Ravneet Kaur trained Raghav Aggarwal and Jaysal Manchanda of Delhi Public School, Sector 12, New Delhi on Portfolio Website Development for two months (July 1, 2023-August 31, 2023).
23. Dr. Ravneet Kaur served as Expert Reviewer for IT related Vocational Education courses at Bhartiya Shiksha Board (BSB).
24. Dr. Monika Bhattacharya served as Expert Reviewer for IT related Vocational Education courses at Bhartiya Shiksha Board (BSB).
25. Prof. Anju Agrawal chaired a session in the 3rd International Symposium on Ciliate Biology (ISCB-2022) organized by Acharya Narendra Dev College and Maitreyi College, University of Delhi under the aegis of DBT STAR College Scheme and IQAC held on November 8, 2022.

Visits

1. Organized an excursion to The Bureau of Indian Standards for the students of B.Sc(H) Electronics and SPIE society chapter member @ANDC, on April 7, 2023.
2. Organized an excursion to National Science Centre for the students of B.Sc(H) Electronics and SPIE society chapter members @ANDC, on February 11, 2023.
3. Organized an education visit to Nehru Planetarium, New Delhi on for the students of B.Sc(H) Electronics and SPIE society chapter members @ANDC, September 24, 2022
4. Organized an Education visit to PM Museum (Pradhanmantri Sangrahalaya), New Delhi for the students of B.Sc(H) Electronics and SPIE society chapter members @ANDC, on September 24, 2022.

Physics: (05)

1. Two month long hands-on training of 05 (five) students on advanced thin film deposition and characterization equipment at Smart Materials and Devices Laboratory at Miranda House, University of Delhi, Delhi – 110 007 during June – July 2023.
2. Organized an educational visit on 31 May 2023 for 09 students to Dr. Anjali Sharma Kaushik's Material Science research laboratory in ARSD College, University of Delhi, Dhaula Kuan Enclave I, Dhaula Kuan, New Delhi, Delhi – 110 021

3. Organized an educational visit on 28 February 2023 (National Science Day) for 10 students to Inter University Accelerator Centre (formerly Nuclear Science Centre) Aruna Asaf Ali Marg, near Vasant Kunj, Vasant Kunj, New Delhi, Delhi – 110 067
4. Organized an educational visit on 28 February 2023 (National Science Day) for 10 students to National Physical Laboratory, Dr KS Krishnan Marg, Pusa, New Delhi, Delhi – 110 012
5. Organized an educational visit on 28 February 2023 (National Science Day) for 10 students to Smart Materials and Devices Laboratory at Miranda House, University of Delhi, Delhi – 110 007

Zoology: (10)


1. MICROSPHERE 2.0: An International Outreach Program: An initiative to promote Microbial Literacy in school and UG Students on September 17, 2022
2. Dr Monica Misra, Professor Seema Makhija. Dr Neel Gagan Singh and Dr Sushma Bhardwaj organized a session on visit to Zebra Culture facility and other research facilities in the Zoology Department for the Non Teaching staff on September 17, 2022 during the NATIONAL WORKSHOP on Career and Skill Enhancement for Non-teaching Staff under the aegis of DBT STAR College Scheme and IQAC.
3. Outreach Workshop on “Cell and Molecular Biology Techniques”: In commemoration of centenary celebrations of University of Delhi, Acharya Narendra Dev College organized an Outreach Workshop on *Cell and Molecular Biology Techniques* under the patronage of Prof. Ravi Toteja, Principal, ANDC. 24 B.Sc students and 26 M.Sc students from GD Goenka University, Gurugram, Delhi were given complete hands-on training on cell and molecular biological techniques like Preparation of Competent cells and Transformation Experiment, making of mitosis slides, plasmid DNA isolation, polymerase chain reaction, agarose gel electrophoresis and restriction mapping October 12-13, 2022.
4. One day workshop on Quantitative microbial ecology: Opportunities and Way-ahead: Acharya Narendra Dev College, University of Delhi (UoD) in association with Gargi College, UoD; IMiLI-SAC & PhixGen Pvt. Ltd. organized a workshop on Microbial Ecology. This event was sponsored by International Society for Microbial Ecology (ISME) on February 04, 2023.
5. Bani School Innovation Camp II (BaSIC V) and Biar Initiative: A School Outreach Program For Enrichment II (BIoSCOPE II): This was the second camp organized in commemoration of Centenary Celebrations of University to motivate and ignite young minds of Govt. Senior Secondary School (GSSS), Bani and Biar located in the Hamirpur District of Himachal Pradesh. This camp was organized for students of classes VI-XI with an aim of uplifting the rural areas through propagation of scientific thoughts, promotion of student-teacher interactions and development of communication skills on February 13-14, 2023.
6. Prof. Sarita Kumar was Resource Person in Workshop on ‘Modification and Upgradation of Biology and Biotechnology Laboratory’, DESM, NCERT from August 1-5, 2022.

7. Prof. Sarita Kumar was Resource Person in Online Review Workshop (reviewing the e-content, uploading Comments & Suggestions on the Google Drive Link Shared, and coordinating with MPD, CIET NCERT faculty from October-December, 2022.
8. Prof. Seema Makhija delivered a talk and conducted workshop on 'Fascinating World of Microbes, Protozoans and Career Opportunities' in G.D. Goenka University, Gurugram

Visits

Organized two one day Educational Trip to National Zoological Park, New Delhi on 29 September 2022 to observe behavior of animal for their Animal Behaviour & Chronobiology paper. Delhi Zoological Park is home to large species of birds and multiple exceptional animals such as White Tiger, Royal Bengal Tiger, Gaur, Jaguar, Rhinoceros, Elephants, Asiatic Lion and lion-tailed monkey.


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Appendix XIII

Invited Lectures

Biomedical Science: (11)

S.No.	Invited Speaker	Designation/Affiliation	Title	Date
1	Dr Anil Kaura	Fingerprint Master, Orient Sourcing Solutions	Crime Scene Investigation	April 12, 2023
2	Mr Shubham Gautam	Cyber Forensic Strategist, Psyberbull	Cyber Forensics	April 12, 2023
3	Ms. Afreen Tarannum	Director, Academic Affairs, SIFS, India	Handwriting and Fingerprint Analysis	April 12, 2023
4	Dr Pawan Mehrotra	Managing Director, Aarna Biomedical Products- A Social Healthcare Enterprise	Panel Discussion with Alumni	April 11, 2023
5	Harshit Arora	MBA Healthcare Management, Goa Institute of Management		
6	AlokAnand	PhD Scholar, IIIT Delhi		
7	Mrinal Chawla	Indian Audit and Account Services (IAS)		
8	AnimeshKar	PhD SRF, Regional Center for Biotechnology, Haryana, India		
9	SonanjaliAneja	PhD Scholar, National Institute of Immunology, Delhi, India		


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10	Dr T. S. Balganes	President and Member, Board of Directors, GangaGen Biotechnologies Pvt. Ltd. (GBPL)	Webinars on Inaugural Sessions of Hands-on training workshop on “Phage Biology-Discovery and Analysis and Webinars on Bacteriophage Therapy”	20 January, 2023
11	Dr Sabrina Green	Research Associate, KU, Leuven University, Belgium		


Botany (02)

S.No.	Invited Speaker	Designation/Affiliation	Title	Date
1	Dr. Inderjeet Kaur Sethi	Retired Associate Professor, SGTB Khalsa college	Living in Sunshine	12 th October 2022
2	Dr. Sumer Pal Singh	Principal Scientist Division of Genetics, ICAR-IARI	Millets: Our National Pride	23 rd March 2023

Chemistry (02)

S.No.	Invited Speaker	Designation/Affiliation	Title	Date
1	Dr. Vivek Mishra (Assistant Professor) and Dr. Ranjan Patra (Assistant Professor)	Amity Institute of Click Chemistry Research and Studies, Amity University, Noida	“Exploring the world of Molecular Chemistry and its Future Prospects”	24 th March, 2023
2.	Dr. Meena Bisht (Assistant Professor)	Department of Chemistry, Sri Venkateswara College, University of Delhi	“Improving the activity and stability of proteins/enzymes in presence of green solvents”	24 th March, 2023


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Computer Science: (02)

S.No.	Invited Speaker	Affiliation	Title	Date
1	Dr. Ihtiram Raja Khan,	Associate Professor, Department of Computer Science and Engineering, Jamia Hamdard University.	Blockchain in Education	11 th April 2023
2	Dr. Navneet Sood,	Senior Consultant in Pulmonology, Dharamshila Narayana Hospital.	How to keep your lungs health despite pollution”	25 th August 2023

Electronics: (01)

S. No.	Name of guest/faculty	Designation	Title	Date
1	Prof. H.C. Verma	Retired Prof., Dept. Of Physics, IIT Kanpur	TALK SHOW during Optics Outreach Culmination	October 06, 2023

Physics: (04)

S. No.	Name of guest/faculty	Designation	Title	Date
1.	Dr. R. K. Kotnala	ex-Chairman NABL, Raja Ramanna Fellow, Department of Atomic Energy and Chief Scientist, CSIR-National Physical Laboratory, New Delhi, INDIA	Hydrelectric cell the best option to do away global warming and green hydrogen generation by water splitting	21 March 2023
2.	Dr. Sujit Kumar	IMEC, Leuven BELGIUM	High level Overview of Semiconductor Industry	09 November 2022
3.	Mr. Siddharth Kumar Das	Nanoelectronic Systems, Technical University of Dresden, GERMANY	Quantum Communication	09 November 2022
4.	Dr. Ramkrishna Sharma	CERN, Geneva, SWITZERLAND	High Energy Physics and Artificial Intelligence	14 October 2022

Zoology: (32)

S. No.	Name of guest/ faculty	Designation	Title	Date
1	Prof Cristina Miceli	School of Biosciences and Veterinary Medicine University of Camerino via Gentile III da Varano 62032 Camerino (MC) ITALY	Ciliate as sensors for environmental stresses	November 08, 2022
2	Prof Bettina Sonntag	University of Innsbruck Research Department for Limnology, Mondsee, Austria	Identification of Planktonic Freshwater Ciliates and their Key Roles in Aquatic Environments	November 08, 2022
3	Prof Alexey Potekhin	Department of Microbiology, Faculty of Biology, St Petersburg	Diversity and Dynamics of Microbiomes associated with Freshwater Ciliates	November 08, 2022
4	Prof. Sergey Fokin	Department of Biology, Università, di Pisa, UNIPI	Ciliates and its symbionts from ecological point of view	November 08, 2022
5	Prof. Gaytha Langlois	Professor of Environmental Policy, Bryant University, Rhode Island, USA	Ciliates in extreme environments	November 08, 2022
6	Prof Zhongtang Yu	Professor, College of Food, Agricultural, and Environmental Sciences OSU Center of Microbiome Science Department of Animal Sciences 110E 2029 Fyffe Road Columbus, OH 43210-1095	Genomics of Rumen Ciliates	November 08, 2022
7	Prof. Elena Sabaneyeva	Professor, Saint Petersburg State University	Symbiotic associations in ciliates: problems and perspectives	November 08, 2022
8	Dr. Alan Warren	Natural History Museum Cromwell Road, London	Protists are for everyone: A personal overview of	November 08, 2022

		9SW7 5B, UK.	knowledge dissemination and promoting public awareness.	
9	Dr Adriana Vallesi	<i>Associate Professor, University of Camerino, Macerata, Marche, Italy</i>	Pheromone and pheromone genes structure, expression and evolution.	November 08, 2022
10	Rosaura Mayén Estrada	Universidad Nacional Autónoma de México, Mexico	Symbiotic ciliates of molluscs with emphasis on species from Mexico	November 08, 2022
11	Dr Valentina Serra	Project Assistant, H2020-MSCA-RISE "NGTax" project, Pisa University	Next Generation Taxonomy: Ciliophora and their bacterial symbionts as a proof of concept" (Acronym: NGTax)	November 08, 2022
12	Dr Yuanyuan Wang	Laboratory of Protozoology, Institute of Evolution and Marine Biodiversity, Ocean University of China	Semi-conservative transmission of eukaryotic N6-adenine methylation, 6mA	November 08, 2022
13	Dr Harpreet Kaur	Postdoctoral Fellow Dacks Lab Division of Infectious Disease, Department of Medicine, University of Alberta	Expansion of SM and Qa-SNARE proteins to regulate vesicle fusion in ciliates	November 08, 2022
14	S. Sripoorna	Postdoctoral Fellow Animal Science Building, Ohio State University, Columbus, Ohio, USA	Bioinformatics analysis of heavy metal (Cadmium and Copper) binding proteins and Cysteine-rich proteins in <i>Tetmemenasp.</i> SeJ-2015 to affirm their roles in heavy metal tolerance	November 08, 2022
15	Dr. Ved Prakash		Assisted Reproductive Techniques	November 01, 2022
16	Prof Brijesh Singh	Director-Global Centre for Land-Based Innovations; Distinguished Professor, Australia	Scaling-up and integrating system-based approaches in environmental microbiome to advance ecosystem services	February 04, 2023
17	Prof. Rup Lal	INSA Senior Scientist, Acharya Narendra Dev	Microbiome: Human Health, Environment, and Societal	February 04, 2023

		College, University of Delhi and Senior Advisor IMiLI	Perspective	
18	Dr Roshan Kumar	Assistant Professor, PG Department of Zoology, Magadh University	Monkey Pox Virus (MPXV): Phylogenomic, Host Pathogen Interactome, and Mutational Cascade	February 04, 2023
19	Dr Debasis Dash	Senior Scientist, CSIR-IGIB	Talk on Proteomics	July 04, 2023
20	Dr Komal Kamra	Associate Professor (Retd.) Department of Zoology, S.G.T.B. Khalsa College, University of Delhi	Interactive Session on Let's think science	
21	Dr. Ved Prakash		Assisted Reproductive Techniques	November 01, 2022
22	Dr Komal Kamra	Associate Professor (Retd.) Department of Zoology, S.G.T.B. Khalsa College, University of Delhi	Interactive Session on Let's think science	
23	Dr. S. B. Dandin	Director (Retd.), Central Silk Board Ex-VC, University of Horticultural Sciences, Karnataka	Sericulture Scenario in India: Introduction	August 08, 2023
24	Dr. N. Krishna Kumar	Former Director, NBAIR (ICAR), Bangalore	Overview of Sericulture in India	August 08, 2023
25	Dr. Thallapally Mogili	Scientist (Retd.) Central Sericultural Research and Training Institute, Mysuru	Propagation, Pruning and Cultivation of Mulberry	August 09, 2023
26	Prof V.B. Upadhyay	Head, Deptt of Zoology (Retd.) DDU Gorakhpur University, Gorakhpur, Uttar Pradesh	Basics of Sericulture	August 09, 2023
27	Dr Sardar Singh	Scientist D and Head RSRS, CSB, Sahaspur, Dehradun	Hatching of eggs and Chawki silkworm rearing technique	August 10, 2023
			Different Techniques of late	

			age silk worm Rearing	
28	Mr Surinder Bhat	Scientist D, Silk Technical Service Center, CSB, Premnagar, Dehradun	Post coccon Technology	August 11, 2023
29	Dr. Deepti Gupta	Professor IIT Delhi	Extraction and applications of sericin biomolecule	August 12, 2023
30	Dr. Yeruva Thirupathaiah	Scientist-C CSRTI, Mysuru	Use of Pupae in Livestock Feed and Cosmetics	August 12, 2023
31	Dr. K.M. Vijaya Kumari,	Director CMER&TI, Lahdoigarh, Jorhat, Assam	Eri and Muga Sericulture in India	August 14, 2023
32	Dr. Vivek Kumar Choudhary	Scientist Incharge & Field Biologist, Tughlaqabad Biodiversity Park CEMDE, University of Delhi	Integrating Tasar cultivation in an ecological restoration process for conservation of Vanya silkworm and development of sustainable livelihood option for local tribal at a degraded mined-out area of Purnapani, Odisha”	August 14, 2023


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Appendix XIV

College has collaborated with several institutes of International repute and signed several MoUs in order to improve the learning possibilities for their respective students and teachers,

Science Setu: Memorandum of Understanding (MoU) between ANDC & NII

The National Institute of Immunology and Acharya Narendra Dev College joined together to launch the NII-Acharya Narendra Dev College Science *Setu* Programme. Such an endeavor is urgently needed since it raises public understanding of the value of science. The main objective is to support the national initiative to entice more and more talented young minds to choose a profession in science and technology. The endeavor would take into account the evolving requirements of biological sciences education, learning, and research. Additionally, it would support the delivery of innovation, research, and continual improvement by involving a talent pool of future biology students. In addition, the endeavor will integrate the undergraduate teaching in biology to the NII in the idea of "success through access." The programme will use on-site and/or online learning methods to accomplish its goals and objectives (depending upon the feasibility). Lectures and discussions, laboratory exercises, summer student and teacher internships, mentorship for student and teacher science projects, career opportunities, cutting-edge teaching and research methodologies, science and technology policy concerns are all possible under the programme. Other relevant activities are another option, as long as it is mutually agreed upon. The programme will inculcate the value of science among students and choose a profession in science.

MoU with International Bacteriophage Research Consortium (International)

MoU between Acharya Narendra Dev College, University of Delhi and Open Health System Laboratory (OHSL), a social benefit corporation established under the laws of the state of California in the United States of America covers collaboration to establish an International Bacteriophage Research Consortium (IBRC) and pursue further research. ANDC-DU and OHSL have already created a web portal for IBRC with the url:

<https://ohsl.us/bacteriophage/international-bacteriophage-research-consortium>

Working together ANDC-DU and OHSL will be developing funding proposals to support and equip research and research facilities at the drug discovery laboratory of the Department of Biomedical Sciences and complementary facilities at the International Research centre of Open Health System Laboratory which will be established in Jhajjar, Haryana in the Indian Institute of Technology, Delhi Biotechnology, Park.

MoU with Auburn University of Montgomery, Alabama, USA (International)

Acharya Narendra Dev College, University of Delhi, India and Auburn University of Montgomery, Alabama, USA, have created a cooperative alliance. The program would encourage international credit transfer and progression arrangements, academic articulation agreements for various programs, the exchange of research and academic materials of mutual

interest, collaborative and foster research activities and projects, the exchange of teaching expertise, the development of e-learning training, and the application of distance learning.

Collaboration with IIT, Delhi for creation of Virtual Labs

College has been recognized as nodal centre for creation of virtual labs, an initiative of MoE, under NMEICT. Theoretical concepts can be delivered to students online but for better understanding of various concepts, a hands-on is a must. ANDC has conceptualized the idea of Virtual lab (V-lab) to provide remote access of various labs to the undergraduate science students through internet.

MoU with Entrepreneurship Cell, School of open learning, University of Delhi

ANDC, in collaboration with Entrepreneurship cell, School of open learning, University of Delhi will be offering certificate course in Entrepreneurship and start up under the UGC scheme of “National skills qualifications framework”. The course can be done after 10+2 and will be of six months duration. This collaboration will also provide the potential entrepreneurs from ANDC with assistance in availing the entrepreneurship schemes by central and state government.

Th!nk Lab– Collaboration with CUBE

Th!nk Lab is an autonomous lab of the students, which works without any supervision of teachers in collaboration with CUBE (Collaborative Understanding Biology Education) network, an initiative of Homi Bhabha Centre for Science Education, TIFR, Mumbai. Under the network, students are connected with students, teachers and research scientists across the country and abroad to discuss and seek answers to various research questions.

Skill Hub @ ANDC

The National Education Policy (NEP) 2020 has recommended incorporation of vocational skills into School and Higher Education curriculums so that students can design their own paths of study and life plans. The ‘Skill Hubs Pilot’ is implemented under central component of Pradhan Mantri Kaushal Vikas Yojana 3.0 (PMKVY 3.0) through National Skill Development Corporation (NSDC) with the support of State Skill Development Missions (SSDMs), State Education Department/Agencies and District Skill Committees (DSCs). This year Acharya Narendra Dev Kaushal Kendra, Skill Hub @ ANDC is selected as a Training Provider for Web Developer Course, and a batch of 19 students has successfully completed the course in 2022.

University of Delhi @ ANDC SPIE Student Chapter

The Society of Photo-Optical Instrumentation Engineers (SPIE), an international society advancing an interdisciplinary approach to the science and application of light, formally approved University of Delhi at Acharya Narendra Dev College SPIE Student Chapter in August 2010. The chapter is open to both students of Acharya Narendra Dev College and University of Delhi. With its establishment, college has joined the elite group within India of IITs, IISc, NIITs and DTU where this chapter has been successfully running for years besides more than 150 well established chapters in other countries like USA, UK, Europe, China, Russian Federation and Canada etc.


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MoU with PhiXgen Pvt, Ltd.

MoU between ANDC and PhiXgen Pvt. Ltd., a company was established on January 30, 2018. PhiXgen Pvt. Ltd and ANDC will work together to explore activities of mutual interest that endeavor to advance research and improve bioinformatic skills and their responsible application worldwide. Specific activities will be outlined in a separate PhiXGen-ANDC work plan for individual events. The major focus of the firm is to work towards innovation, development, deployment, and commercialization of products and services. The work mandate includes providing technical services to beginners who are facing difficulties in their projects. This primarily includes support for Next Generation Sequencing projects for Genomics, Transcriptomics and Proteomics studies. We purpose to serve various national and international government and private sector agencies like industries/universities/colleges/autonomous bodies/departments etc. The wide scope of the firm also includes onsite/offsite/online training courses for graduates/post-graduates and corporate professionals.


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Appendix XV

External Students Interns Trained under ANDC Faculty

S. No.	Supervisor (Department)	Candidate	Project title
1.	Prof. Urmi Bajpai (Biomedical Science)	Mr Imaad, M.Sc. (Biotechnology), Central University of Haryana. (February-June, 2023)	Cloning, expression and purification of Mycobacteriophage-encoded Lysin enzyme.
2.		Ms Shreya Saxena, M.Sc. (Biotechnology), Banasthali (January- June, 2023)	Isolation and Characterization of Novel Mycobacteriophages and <i>In vitro</i> Analysis of Recombinant LysinB
3.	Prof . Geetu Gambhir (Chemistry)	Ms. Nishitha, M. Sc. Amity University	Tamarind (TKP) based nanocomposite for mitigation of Dyes from waste water.
4.			Magnetic Tamarind (TKP) -GO biocomposite for mitigation of Dyes.
5.	Ms. Preeti Marwaha (Computer Science)	Mayank Singh Pundir, BITS Pilani	Use of Machine Learning and Knowledge Representation techniques to classify and organize the microbial information of polluted Soil and Water in Delhi.
6.	Prof. Anju Agrawal Dr. Ravneet Kaur (Electronics)	Raghav Aggarwal Jaysal Manchanda	Portfolio Website Development
7.	Prof. Monisha Khanna Kapur (Zoology)	Beenit Kushwaha (Galgotia's University)	Basic Techniques of Laboratory, Tenure: 1 month from 4 th July to 4 th August 2023
8.	Prof. Ravi Toteja Prof. Seema Makhija (Zoology)	Merwin Mammen Mathew M.Sc. Microbiology Department of Biosciences, Jamia Milia Islamia, New Delhi	Identification of bacterial species growing in Pringsheim's medium which serve as prey for ciliates.
9.		Ankush M.Sc. Biotechnology Department of	Physico-chemical properties of soil and identification of soil ciliates from morphologically and molecular

		Biotechnology, School of Interdisciplinary and Applied Life Sciences, Central University of Haryana, Mahendragarh, Haryana	systematics.
10.		Nidhi Bisht M.Sc. Biotechnology Graphic Era (Deemed to be University), Dehradun	To Study the Effects of Chromium and Arsenic on Eukaryotic Microbes, Paramecium sp. and Tetmemena sp.
11.		Akshita M.Sc. Biotechnology Graphic Era (Deemed to be University), Dehradun	To study water quality parameters and ciliate diversity in the Delhi NCR stretch of river Yamuna, India.
12.		Simran Chopra B.Sc. Life Sciences II Year Miranda House, University of Delhi. Delhi	Basic culturing and identification techniques for ciliates.

Post-Doctoral Fellows under the Supervision of College Faculty

S. No.	Supervisor (Department)	Post-Doctoral fellow	Area of work and date of registration
1.	Prof. Sarita Kumar (Zoology)	Dr. Monika Mishra (CSIR-SRA)	Physiological, biochemical and molecular response of <i>Helicoverpa armigera</i> Hübner to synergistic combinations of triflumuron and β -sitosterol Date of Registration: Jan 1, 2021


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