



**Miranda House**  
UNIVERSITY OF DELHI

**DS Kothari Centre for Research and Innovation in  
Science Education**

# Summer Workshop 2018

**Flavour of Research:  
Investigative Projects in Multidisciplinary Contexts**



**D S Kothari Centre for  
Research and Innovation in Science Education**  
Miranda House, University of Delhi

**Flavour of Research**  
Investigative Projects in  
Multidisciplinary Contexts

**Summer Workshop**  
(June – July 2018)

**Orientation Program**  
**Date: 7 June 2018**  
Physics Lab II (261)  
10:00 am

**Registration**  
Time: 9:00 am

**Registration Fee**  
Rs.500 (DU Students)  
Rs.1000 (Non DU Students)



## **Summer Workshop 2018**

### **Flavour of Research: Investigative Projects in Multidisciplinary Contexts**

Summer Workshop is an outreach activity of the DS Kothari Centre. This year the 6-weeks long Workshop was held from 15 May to 30 June 2018 and from 07 June to 13 July 2018. 75 students participated in these Summer Workshops and carried out projects in interdisciplinary fields. The research projects were experimental hands-on projects and were funded by the College and the Star scheme of DBT. 14 faculty members of the three participating Departments mentored 19 projects.

#### **DEPARTMENT OF CHEMISTRY**

##### **Project 1:**

**Title of the Project: Preparation and characterization of metal and mixed metal oxide nanoparticles by Pechini method**

Students' Names

1. Chetna, B.Sc. (H) Chemistry, II Year, Miranda House
2. Pallavi, B.Sc. (H) Chemistry, II Year, Miranda House
3. Komal Choudhary, B.Sc. (H) Chemistry, II Year, Miranda House

##### **Project 2:**

**Title of the Project: Preparation and properties of Recycled paper using different additives during pulping**

Students' Names

1. Jasleen Kaur, B.Sc. (H) Chemistry, II Year, Miranda House
2. Tanya, B.Sc. (H) Chemistry, II Year, Miranda House
3. Varnika, B.Sc. (H) Chemistry, II Year, Miranda House
4. Aarushi, B.Sc. Life Sciences III Year, Gargi College

##### **Project 3:**

**Title of the Project: Green Chemistry and Cosmetics Synthesis**

Students' Names

1. Kanika Sharma, M.Sc. Chemistry, G.D. Goenka University, Gurugram
2. Kunika Saini, M.Sc. Chemistry, G.D. Goenka University, Gurugram
3. Pooja Singh, M.Sc. Chemistry, G.D. Goenka University, Gurugram
4. Aman, B.Sc. (H) Chemistry, II Year, Miranda House

#### **DEPARTMENT OF PHYSICS**

The Department of Physics conducted the following student research projects under DSKC:

##### **Project 1:**

**Study of Arduino with emphasis on control circuit on automation**

Students' Names:

1. Ravina, M.Sc. Physics, I Year, Banasthali University

2. Varsha Kumari, M.Sc. Physics, I Year, Banasthali University
3. Rakhi Verma, M.Sc. Physics, I Year, Banasthali University
4. Swati Sharma, M.Sc. Physics, I Year, Banasthali University

### **Project 2:**

#### **Arduino Mobile**

Students' Names:

1. Himani, B.Sc. (H) Physics, II Year, Miranda House
2. Chinkey, B.Sc. (H) Physics, II Year, Miranda House

### **Project 3:**

#### **Automated Waste Segregator**

Students' Names:

1. Komal, B.Sc. (H) Physics, I Year, Miranda House
2. Monika, B.Sc. (H) Physics, I Year, Miranda House
3. Aditi Singh, B.Sc. (H) Physics, I Year, Miranda House
4. Dipika Sharma, B.Sc. (H) Physics, I Year, Miranda House
5. Mukta, B.Sc. (H) Physics, I Year, Miranda House

### **Project 4:**

#### **Theremin (Proximity Sensor)**

Students' Names:

1. Harsha, B.Sc. (H) Physics, I Year, Miranda House
2. Ankit Soni, B.Sc. (H) Physics, II Year, Hindu College

### **Project 5:**

#### **Automated Farm**

Students' Names:

1. Mayank Nayak, B.Sc. (H) Physics, I Year, Hindu College
2. Mani Tyagi, B.Sc. (H) Physics, I Year, Hindu College
3. Divyanshu Fauzdar, B.Sc. (H) Physics, I Year, Hindu College
4. Ramswaroop, B.Sc. (H) Physics, I Year, Hindu College

### **Project 6:**

#### **IOT Based Homs Automation and smart doorbell system**

Students' Names:

1. Khushbu, B.Sc. (H) Physics, II Year, Miranda House
2. Kritika, B.Sc. (H) Physics, II Year, Miranda House
3. Anmol, B.Sc. (H) Physics, II Year, Miranda House

### **Project 7:**

#### **Classical Mechanics experiments by the use of Tracker**

Students' Names:

1. Ananya Kumari, B. Sc (H) Physics, II Year, Miranda House
2. Shikha Yadav, B. Sc (H) Physics, I Year, Miranda House
3. Sanjana Yadav, B. Sc (H) Physics, I Year, Miranda House

4. Sudarshana Yadav, B. Sc (H) Physics, I Year, Miranda House
5. Poonam, Physical Sciences, I Year, Guru Jambheshwar University of Science & Technology
6. Bharti, Physical Sciences, I Year, Guru Jambheshwar University of Science & Technology

### **Project 8: Decrease in Oxygen Content due to Microplastics**

Students' Names:

1. Mayank Pant, B.Sc. (H) Physics, II Year, Ramjas College
2. Aditya Singh, B.Sc. (H) Physics, I Year, Ashoka University
3. Shreya Dey, B.Sc. (H) Physics, I Year, Ashoka University

### **Project 9:**

#### **Title of the Project: Diffusion Cloud Chamber**

Students' Names:

1. Anmolreet Kaur, B. Sc (H) Physics, I Year, Miranda House
2. Garima Choudhary, B. Sc (H) Physics, I Year, Miranda House
3. Anjali, B. Sc (H) Physics, I Year, Miranda House
4. Jyotsna Madan, B. Sc (H) Physics, I Year, Miranda House

### **Project 10:**

#### **Title of the Project: Quark Net Cosmic Ray Muon Detector**

Students' Names:

1. Rashmi Wadhwa, B. Sc (H) Physics, I Year, Miranda House
2. Shivani Yadav, B. Sc (H) Physics, I Year, Miranda House
3. Sakshi, B. Sc (H) Physics, I Year, Miranda House
4. Shambhvi Nigam, B. Sc (H) Physics, I Year, Miranda House
5. Sonal, B.Sc. (H) Physics, I Year, Miranda House
6. G. Vishnupriya, B. Sc (H) Physics, I Year, Miranda House
7. Sochannao Machinao, B. Sc (H) Physics, I Year, Miranda House

### **Project 11:**

#### **Title of the Project: Fabrication of Low Cost $PM_{2.5}$ Sensor Based on Optical Sensing**

Students' Names:

1. Manshi Rani, B. Sc (H) Physics, I Year, Miranda House
2. Krishnananda CP, B. Sc (H) Physics, I Year, Miranda House
3. Kanika, B. Sc (H) Physics, I Year, Miranda House
4. Krishna Chaudhary, B. Sc (H) Physics, I Year, Miranda House
5. Chongtham Jayshri, B. Sc (H) Physics, I Year, Miranda House

### **Project 12:**

#### **Title of the Project: The Intelligent Mirror powered by Raspberry PI**

Students' Names:

1. Nirmal Singh, B. Sc (H) Physics, II Year, Hindu College
2. Prashant Kumar, B. Sc (H) Physics, II Year, Hindu College
3. Sandeep Kumar, B. Sc (H) Physics, II Year, Hindu College

**Project 13:****Title of the Project: Hearing Aid Machine**

Students' Names:

1. Priyanka Rajwani, B.Sc. (H) Physics, II Year, SGTB Khalsa College
2. Seema Kumari, B.Sc. (H) Physics, I Year, SGTB Khalsa College

**Project 14:****Title of the Project: Acetone Sensor**

Students' Names:

1. Rajdeep Kaur, B.Sc. (H) Physics, II year, Miranda House
2. Yachika, B.Sc. (H) Physics, II year, Miranda House
3. Manikarnika, B.Sc. (H) Physics, II year, Miranda House

**DEPARTMENT OF ZOOLOGY**

The Department of Zoology conducted the following student research projects under DSKC:

**Project 1:****Title of Project: Assessment of Immunogenecity of Mycobacterium tuberculosis DOSR Genes by In-Silico Anaysis, Molecular Cloning and PBMC Stimulation**

Students' Names:

1. Yamini Gupta, B.Sc. (H) Zoology, I Year, Miranda House
2. Arvinder Singh, B.Sc. (H) Zoology, I Year, SGTB Khalsa College
3. Anuradha, B.Sc. (H) Zoology, II Year, Miranda House
4. Shria Mattoo, B.Sc. (H) Zoology, II Year, Miranda House
5. Amisha Sanwaria, B.Sc. (H) Zoology, II Year, Miranda House
6. Pragya Kamal, B.Sc. Life Sciences I Year, Miranda House
7. Lavi Bhati, B.Sc. (H) Zoology, I Year, Hansraj College
8. Harshit Arya, B.Sc. (H) Botany, II Year, Hansraj College
9. Radhika Singh, B.Sc. Life Sciences III Year, Miranda House
10. Tamanna, B.Sc. (H) Zoology, II Year, Miranda House

**Project 2:****Title of the Project: Cultural Analysis of Soil and Water samples for Presence of Thermophiles**

Students' Names:

1. Sakshi Saini, B.Sc. (H) Zoology, II Year, Miranda House



## Teacher Mentors

### Chemistry Department

Dr. Bani Roy  
Dr. Mallika Pathak  
Dr. Malti Sharma  
Dr. SujataSengupta  
Dr. Shivani  
Dr. Manika Dewan  
Dr. M Rajeswari  
Dr. Firdaus Parveen

### Physics Department

Dr. Mallika Verma  
Dr. Monika Tomar  
Dr. S N Sandhya  
Dr. Geeta Rani

### Zoology Department

Dr. Monika Sharma  
Dr. Sadhana Sharma

## Support Staff

### Botany Department

Mr Vijay Kumar  
Mr. Dinesh Sharma  
Mr. Sonu Giri  
Mr. Satish Chander Bhardwaj  
Mr. Binod Kumar Mahto  
Mr. Rohit Tank  
Mr. Dinesh Giri

### Physics Department

Mr. Cherian Daniel  
Mr. Naveen ChanDr.a Bhatt  
Mr. Rajkumar Rana  
Mr. Jay Prakash  
Mr. Vinod Kumar  
Mr. Sachin Singhal  
Mr. Himanshu

### Chemistry Department

Mr. Ravi Kumar  
Mr. Vijay Kumar  
Mr. Vikash Kaner  
Mr. Shashi Mohan Shah  
Mr. Rajender Kumar  
Mr. Sanjeev Kumar  
Mr. Harkesh Meena

### Zoology Department

Mr. Ramesh Sharma  
Mr. Rakesh Kumar  
Mr. Sanjay Dutt  
Mr. Mukesh Manik  
Mr. Uday Chaudhary  
Mr. Puneet Ranga  
Mr. Suresh Prajapati  
Mr. Chandra Shekhar

Dr. Pratibha Jolly  
**DSKC Coordinator / PI**

Dr. Mallika Verma  
**Programme Coordinator**