

# **Report on FDP-Research Techniques in Science and Technology (July 18<sup>th</sup>-23<sup>rd</sup>, 2022)**

**Target Group:** Faculty and Researchers

**Resource Person:** Faculty across universities (National and International)

**Conveners:** Dr Ruby Jindal (SBAS, KRMU), Dr Nidhi Gaur (SBAS, KRMU) and Dr Archana Tripathi (Assistant Professor) Gargi College, Delhi University .

**Duration:** July 18-23, 2022

**Venue:** ONLINE.

## **Introduction**

A Six days Faculty Development Programme on "Research Techniques in Science and Technology" was successfully organized by School of Basic and Applied Sciences in collaboration with Gargi College, University of Delhi, **from 18<sup>th</sup> July, Monday to 23<sup>rd</sup> July, Saturday, 2022**. The faculty development programme had the prime objective to impart knowledge pertaining to scientific inquiry and to integrate qualitative and quantitative approaches in research. Knowledge of applied research tools and methodology along with the use of software helps in integrating research and practice. Faculty and researchers at times, find themselves technically constrained while promoting research due to lack of sufficient understanding of statistical analysis and techniques. Hence, to ensure more skillful and scientific data analysis as well as high quality research output from faculty a formal training is required. This 6 days -FDP aimed at honing the teaching and research skills of faculty, researchers and trainers, which was successfully met by the informative lecture of the Experts.

## **Objectives**

Specific objectives which were targeted in this FDP were:

- To familiarize participants with experimental and theoretical techniques in research.
- To provide an opportunity for the participants to interact and learn from experts.
- To mentor participants on publishing their research in reputed journals.

## **Number of participants:**

In all 100 participants registered for the FDP from the different institutions.

## **Themes of FDP**

- Experimental Research Techniques
- Artificial intelligence in Research

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Day 2-FDP: Research Unipg

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SUN  
The Ultimate Source of Energy

Temperature Sensor

Hot Water Out

Cold Water IN

Tank

Dead Plug

Header

Collector-In

Delta Winglets

Risers

Footer

Ball Valve

Temperature Sensor

Schematic diagram of outdoor experimental set-up

11:25 / 26:11

meeting@trent.ac.uk

11:32 AM 19-Jul-22

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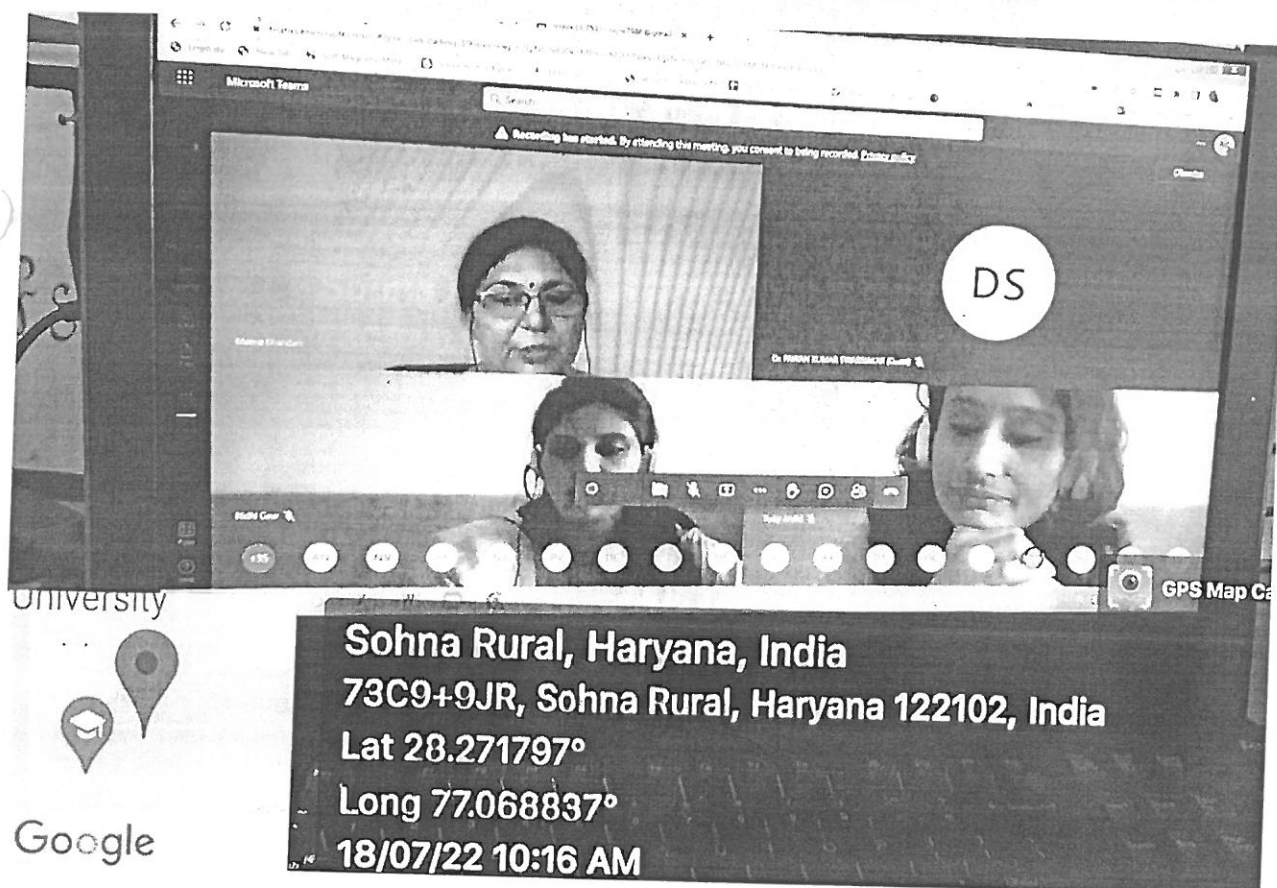
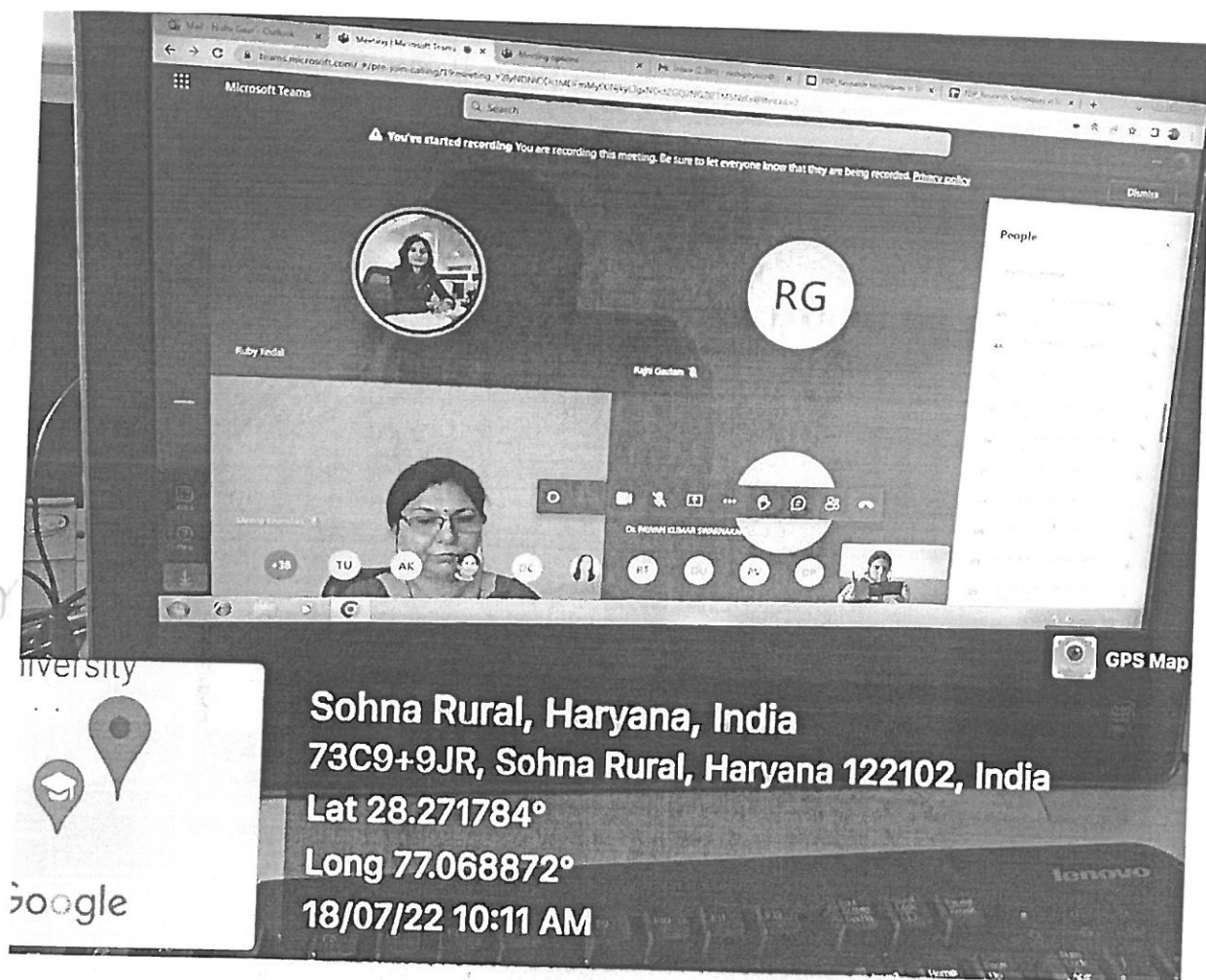
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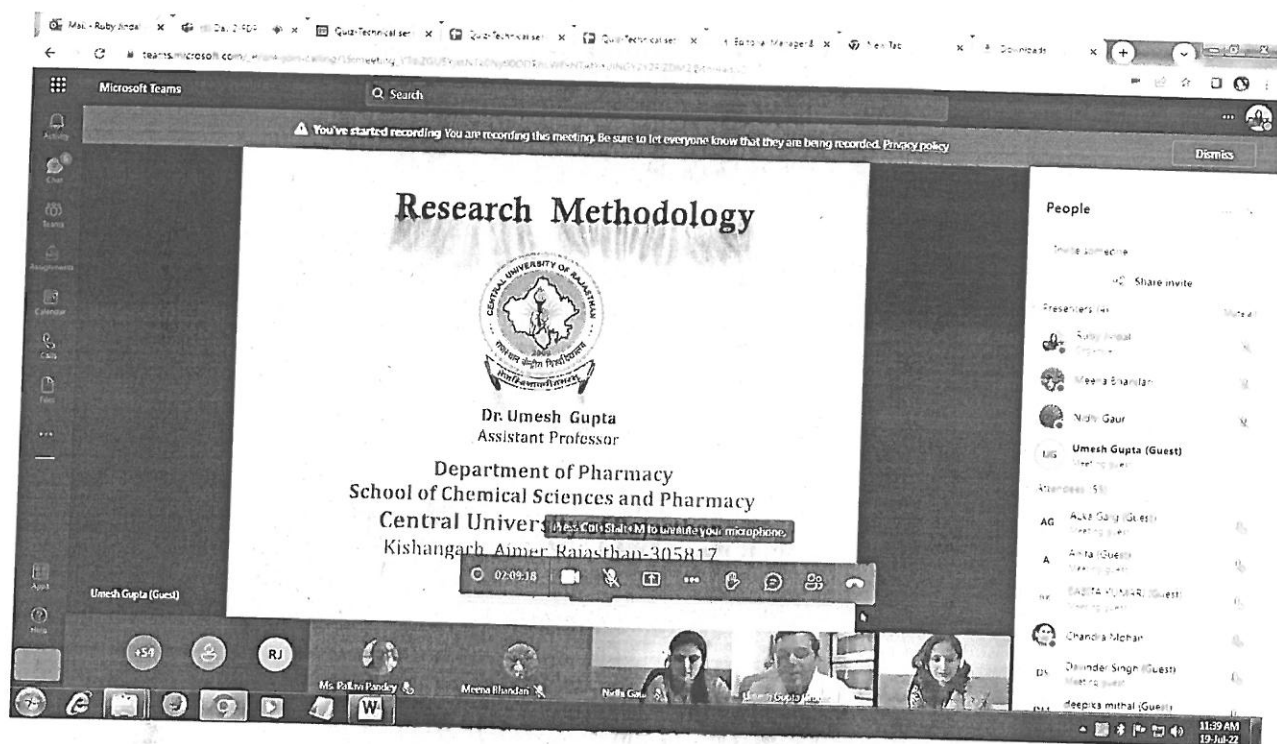
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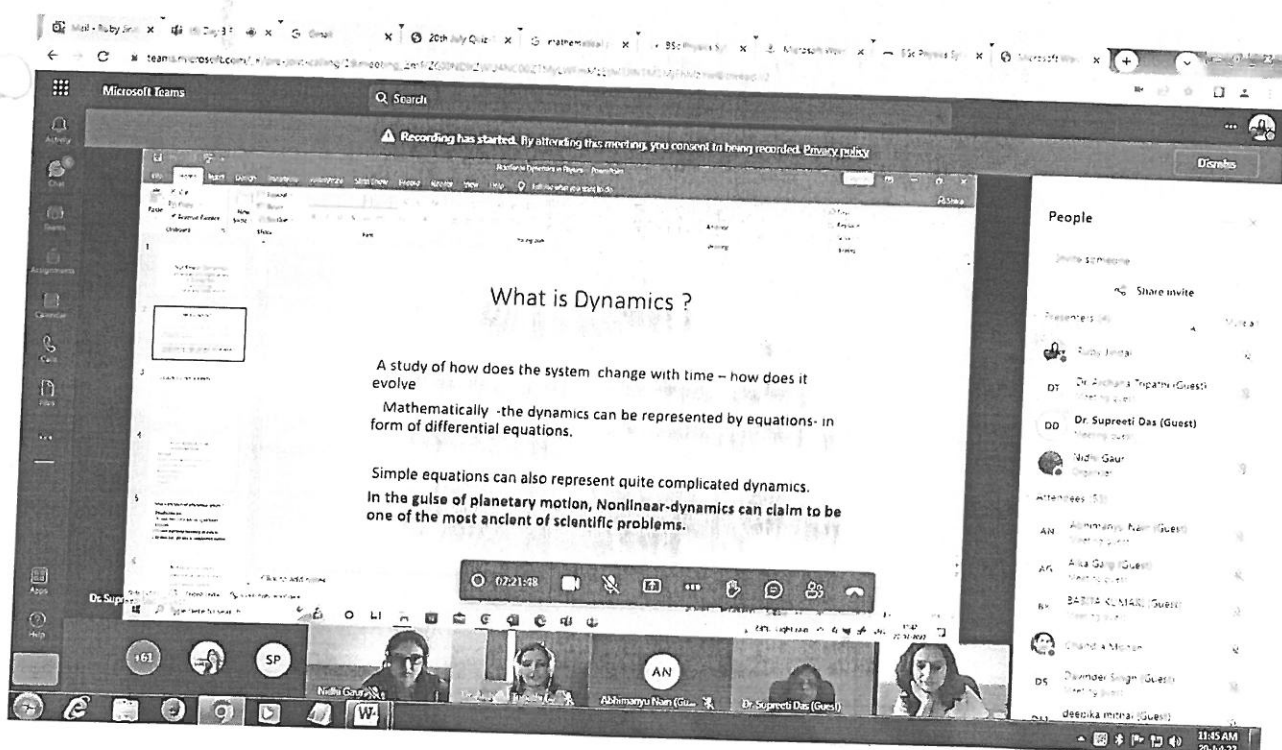


In the Second session of Day 2, Dr. Nidhi Gaur, Convener of the FDP welcomed Dr. Umesh Gupta, Associate professor, Central university of Rajasthan. The talk was focused on multiple reasons and aspects behind a successful research completion, writing a good research paper and its importance in communicating any idea to the scientific community. The speaker covered all the requisites in detail which are extremely important for academic research writing. Dr. Ruby Jindal concluded the session by presenting the vote of thanks





In Session II of Day 3 Dr. Ruby Jindal welcomed Dr. Supreeti Das, Associate Professor, University of delhi. The session "Applications of Nonlinear dynamics in Physics" was focused on the applications of nonlinear dynamics in Physics. The session elaborately covered the topic starting from the very conceptual basics of dynamics, discussing the real world nonlinear systems and reaching out to chaotic systems highlighting the importance of the initial conditions which is of cardinal importance to gain the complete insight of nonlinear phenomenon. The session came to an end with vote of thanks given by Dr. Nidhi Gaur.



Microsoft Teams

# BRAGG'S LAW

$$n\lambda = 2d\sin\theta$$

- For large inter-planar spacing the angle of reflection tends towards zero  $\rightarrow$  as  $d$  increases,  $\sin\theta$  decreases (and so does  $\theta$ ).
- The smallest interplanar spacing from which Bragg diffraction can be obtained is  $\rightarrow$  maximum value of  $\theta$  is  $90^\circ$ ,  $\sin\theta$  is 1  $\rightarrow$  from Bragg equation  $d$

Alka Garg (Guest)

People

Share invite

Presenters (2)

Ruby Jindal

AG Alka Garg (Guest)

Attendees (14)

AN Anshu Nam (Guest)

A Anshu (Guest)

BK BASITA KUMAR (Guest)

Chandra Mohan

DS Dhanendra Singh (Guest)

DM deepika mithal (Guest)

DL Dr Seema Joshi (Guest)

Dr Shahad Ali (Guest)

11:48 AM 21-Jul-22

Microsoft Teams

# BRAGG'S LAW

The source is not necessarily the source of  $\theta$  side

For convenience this source may be halved and the angle effect is equivalent

As the scan takes place of increasing angles, planes with suitable  $d$ , which diffract are picked out from favourably oriented crystallites

hkl	d	$\sin\theta$	$\theta$
100	4.00	0.19	11.10
110	2.83	0.27	15.80
111	2.31	0.33	19.35
200	2.00	0.39	23.64
210	1.79	0.43	25.80
211	1.63	0.47	28.12
300	1.33	0.52	31.30
310	1.26	0.61	37.50

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DS Dhanendra Singh (Guest)

DM deepika mithal (Guest)

DL Dr Seema Joshi (Guest)

Dr K A Verma (Guest)

11:54 AM 21-Jul-22

## DAY-5

**Resource Persons:** Following were the key resource persons in Day 5 of FDP:

Day-5 22 <sup>nd</sup> July, 2022	10:00am-11:00am	<b>Technical Session-8; Dr. Sunita Sharma - Electron Microscopy- A Boon for Material Morphology</b>
	11:30am-12:30pm	<b>Technical Session-9; Dr. Seema Raj: Hands on Zotero as Reference manager</b>

Dr. Ruby Jindal welcomed Dr. Sunita Sharma Assistant Professor, NCU on the fifth day in the first session. The talk was on the construction and working of SEM, discussing about its usage in detail. It also covered basics of optical microscopy. The session concluded with active participation by the audience in question-answer round and vote of thanks by Dr Nidhi Gaur.





## Day 6 -Valedictory session

The six days Faculty Development Programme on “Research Techniques in Science and Technology” came to a close on 25<sup>th</sup> August 2022, with a Valedictory function. Dr Nidhi Gaur started the session with inaugural speech which was further proceeded by the vote of thanks to speakers and summary of their work by Dr Archans Tripathi. The session was smoothly taken over by Dr. Ruby Jindal .She gave motivational remarks to all the participants for their active participation and also highlighted the importance of research techniques in doing research work. The session came to an end by the vote of thanks delivered by Dr Meena Bhandari, Dean, SBAS, KRMU. She thanked the principal of Gargi college and KRMU management for providing their support to conduct this event and also extended her thanks to the organizing team for conducting the FDP. She also emphasized on the relevance of quality research during the valedictory programme and encouraged the participants to keep learning research methodology techniques and doing quality research. This FDP was the feather in the cap and it was a milestone and there will be many on the way to come.

