

# Capacity Building Program For PGT Mathematics of DoE at IIT Mandi



स्वाध्यायान्मा प्रमद



**STATE COUNCIL OF EDUCATIONAL  
RESEARCH AND TRAINING, Delhi**

# Capacity Building Program For PGT Mathematics of DoE at IIT Mandi

## Details of the Program

**No. of proposed participants:** Thirty Four (34)

**No. of participants attended:** Thirty Four (34)

**Stakeholders:** PGT Mathematics of DoE

**Transaction Methodology:** Hand on Sessions, Lab-based Activities, Lecture Method, Real Life Scenerios.

**Duration of Program:** 25-11-2024 to 29-11-2024

**Name of Coordinator:** Firdous Ahmad



# Capacity Building Program For PGT Mathematics of DoE at IIT Mandi

## OBJECTIVES

1. To promote hands-on experiential learning in the specific context of Mathematics
2. To nurture creativity and conceptual understanding.
3. To integrate experimentation and observation with Mathematics learning.
4. To expose with an alternative pedagogy of Mathematics.

## SESSION PLAN

Day	Dates	09:30 - 10:30	10:30 - 11:30	12:00 - 13:00	14:00 - 15:00	15:00 - 16:00	16:30 - 17:30
Monday	25-11-2024	Inaugural	Sahakaryena sarvam sadhyate: Breaking the Ice Through Collaborative Activities	Ganiteey Drshtikon: GeoGebra ke Saath Gyaan Ki Roshni (Geogebra)	Ganiteey Drshtikon: GeoGebra ke Saath Gyaan Ki Roshni (Geogebra)	Ganit Ki Bhasha: Sankhya Se Lekar Tarka Tak	Shabdon Se Shilp Tak: Vectors ke Madhyam se Geometry ka Anubhav
Tuesday	26-11-2024	Algebraic Gyaan: Unfolding the Mysteries of Matrices and Determinants in Life's Symphony	Ganitiya Cintana: Weaving Abstract Threads into Reality	Ganiteey Drshtikon: GeoGebra ke Saath Gyaan Ki Roshni (Geogebra)	Ganiteey Drshtikon: GeoGebra ke Saath Gyaan Ki Roshni (Geogebra)	Tinkering Lab Visit	Tinkering Lab Visit
Wednesday	27-11-2024	Vyutpannakalanam ganite parivartanasya gūḍhatām udghāṭayati (Differential calculus uncovers the mysteries of change in mathematics)	From Set to Function: The Flow of Rhythm in the Dance of Numbers	Ganiteey Drshtikon: GeoGebra ke Saath Gyaan Ki Roshni (Geogebra)	Unlocking the Dimensions: Navigating the Disha Gyan of 3D Geometry	Sangāṭhita Kuśalatā: Sundara Lekhanam ca Swaroopaniyāsam Rūpeṇa Māstering LaTeX Lekhanena (Crafting Perfection: Mastering Elegant Writing and Formatting by writing in LaTeX)	Sangāṭhita Kuśalatā: Sundara Lekhanam ca Swaroopaniyāsam Rūpeṇa Māstering (Crafting Perfection: Mastering Elegant Writing and Formatting: Latex Writing)
Thursday	28-11-2024	Samākhalaṇam ganite jivana-sāraṁ saṅgrhṇāti (Integration in mathematics gathers the essence of life)	Vibhājana-samikaraṇāni jivana-parivartanasya rahasyāni udghāṭayanti (Differential equations reveal the secrets of life's transformations)	Decision-making using Mathematics: practical applications of LPP	Parashar Visit		Parashar Visit
Friday	29-11-2024	Mūlyāṅkan: Understanding Assessment, Evaluation, and Transformative Feedback	Yaksha Prashana: Designing Assessments to Unveil Student Potential	Yaksha Prashana: Designing Assessments to Unveil Student Potential	Charting Your Future: Classroom Shiksha se Competitive Excellence Tak	Anubhav aur Rachnatmak Sujhav: The Gathering of Thoughts and the Path of Development	Aabhārṭh, Pramāṇapatra-Vitarāṇam cha, Navārṇ Ārambham Pratikṣayām (Gratitude, and Certificate Distribution, and Looking Forward for a New Beginning)

## Day 1

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On the first day, the inaugural and orientation ceremony includes an introduction about the faculty of IIT Mandi, the motto of the Capacity Building Program, and an introduction of participants. Dr. Manoj Thakur of the Maths faculty was overall In-Charge of this CBP for training sessions. Mr. Pavin was the coordinator from IIT. We also met Dr. Tushar Jain who was in charge of Centre For Continuous Education. He told us that this CCE is meant for outreach activities for rural and urban school students, college students, and faculty.

After having a group photograph and tea break we rejoined for the first session which was taken by Dr Manoj Thakur and consisted of various interesting mathematical questions in the form of a quiz competition to make it more interesting. We sat in the different teams made by Dr. Manoj and enjoyed the questions.

Then after lunch, we went to the computer laboratory to learn Latex with hands-on training by Dr. Preeti Sabarwal, Dr. Manoj, and his team.

After the tea break around 4 pm, a session was taken by Dr. Kesar and she Introduced relations and functions and told us how to make it more interesting then lastly we did activity based on probability by Dr. Manoj Thakur. It was so interesting that instead of 5:30pm ,time to over the session all participants are ready to learn more and we attended the session till 6:30pm.

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## Day 2

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### Session 1:

The session began with a detailed exploration of vectors by Dr. Preeti Sabharwal, which are fundamental in many fields of mathematics. She correlated vectors with day-to-day life activities and explained their relation with matrices.

### Session 2:

The discussion on functions by Dr. Sampat delved into the definition of a function and its types such as one and onto. He explained how can we teach students by relating to their classroom examples along with the formulations to find the number of functions too.

### Session 3:

In this session, GeoGebra, a dynamic mathematics software, was introduced by Dr. Manoj Thakur and their associated research fellows as a powerful tool for visualizing mathematical concepts. Key highlights of the session included the concept of How to use GeoGebra for plotting curves and performing geometric constructions.

Participants were given hands-on training on GeoGebra for a better experience of learning.

### Session 4

LaTeX, a typesetting system used for creating high-quality mathematical documents, was also a central theme of the session which was introduced yesterday by Dr. Preeti and we learned the basics of LaTeX syntax for writing mathematical concepts such as summation, product, and limits, etc.

To conclude the day Mr. Abhay and Mr. Shivam Dubey introduced to the concept of excursion activities in mathematics by various interesting games which ended up the whole day on a high note of enthusiasm for tomorrow.

## Day 3

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### Session 1:

The day started with a discussion of the previous day's problems by Dr. Manoj Thakur along with an activity of probability.

The session started with a brief description of Calculus by Dr. Anil Kishan and he introduced how can we relate Calculus to daily life problems. He also gave the depth knowledge of limits and continuity.

### Session 2:

In this session, Dr. Sampat introduced how can we prove Binomial identities by relating them to real-time world problems so that it makes concepts interesting.

### Session 3:

In this session, a demonstration of GeoGebra's features such as plotting graphs of various functions and drawing polygons was introduced by Dr. Manoj Thakur and his associated research students to dive deep into the concept.

### Session 4:

The session by Dr. Preeti Sabharwal included an overview of LaTeX to write matrices and insert tables in documents in various formalis.

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## Day 3

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After the session on Day 3, we got together for DHAM, which is a traditional feast prepared and served during ceremonies like marriages, family events, and religious events in Himachal Pradesh.

It all started around 1300 years ago when the then-king of Himachal Pradesh, Jaistambh, was so impressed by Kashmiri wazwan that he ordered his cooks to prepare a similar feast back home but without the use of meat and onion, garlic. Thus this new kind of cuisine was born in Himachal Pradesh.

We enjoyed Mandayeli Dham and then after that, we enjoyed BON FIRE, which make a bond with faculty of IIT Mandi and among the participants.



## Day 4

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### Session 1:

The session started with a brief description of probability by Dr. Manoj Thakur and he introduced how can we correlate conditional probability to daily life and also gave the depth knowledge of conditional probability.

### Session 2:

In this session, DR ANIL KISHAN continued with calculus and introduced Differential equations with real-life problems, which were very interesting.

Then we Visited TrienkingLab and enjoyed all the project, experiments made by students under the guidance of Dr. Rahul.





## Visit to Parashar Lake

Nestled in the serene mountains, it is a beautiful high-altitude lake surrounded by lush green meadows and thick forests. It's known for its scenic beauty, tranquility, and the floating island within the lake, as well as the nearby ancient temple dedicated to sage Parashar.

Our lunch was served near the lake, so we enjoyed a meal amid the breathtaking landscape and reached back to campus by 8pm.



## Day 5

### Session 1:

In this session, Dr. Manoj Thakur discussed Assessment, Evaluation and it's transformative feedback. He talked about BLOOM'S TAXONOMY.

He covered all the parameters as per students' views and related them to questions and their formats.

### Session 2:

Continue the session Dr. Manoj told us about Designing Assessments to unveil students' potential. we talked and discussed various board, policies NEP, and education systems.

### Session 3:

In this session with Dr. Manoj and Dr. Preet, we talked about charting your future classroom which should be a classroom Shiksha se competitive excellence task. We discussed formative and Summative assessments. we also discussed innovation in education. we did activities in this session and made beautiful art , crafts and graph using mathematical concepts.

### Session 4:

As we reached the last day of training , It's about feedback and suggestions.

It continued with gratitude, prize distribution of all quiz and activities done in overall CBP training by the participants and also in the end certificate distribution with a beautiful gift, Himachali cap with all faculty, coordinator and HOD of mathematics department.



## List of Participants

Sr. No.	Name	Employee ID	School Address	School ID
1	DINESH KUMAR SHARMA	19910817	GBSSS KHAJHORI KHAS	1104015
2	MANISHA	20220872	GSKV GOKALPUR VILALGE	1104021
3	USHA SINGH	20000123	Shahdara GT Road SKV	1105024
4	RAJENDRA JAIN	19910674	GBSSS, C-BLOCK DHISHAD GARDEN	1106002
5	RAVINDRA PAL SINGH	20102143	G S V LANCER ROAD DELHI-54	1207032
6	SUSHIL KUMAR	20071058	GBSSS NO - 2 ROOP NAGAR	1207016
7	SUSHIL KUMAR	20091429	GSBV Burari	1207009
8	PRAMOD KUMAR GUPTA	20025180	RPVV-Kishan Ganj, Delhi	1208092
9	RAJNI TUTEJA	19921091	Shalimar Bagh BL Block-SKV	1309030
10	BHUVENDER KR JAYANT	19990788	Shalamar Village-GBSSS	1309273
11	KAMLESH KUMARI	19910689	GGSSS Shahbad daultapur 1310411	1310411
12	RAJNI MAHAJAN	20092819	G Co-ED SSS, Sainik vihar	1411178
13	ASHOK KUMAR MEENA	20226403	Mubarkpur Dabas, No.2-GBSSS	1412254
14	MEGH SINGH GAUTAM	19961079	SCSD S.V sector-9, Rohini	1413010
15	KIRAN PAL	20130217	SBV SAWADA (GHEVRA) COLONY B-BLOCK	1413323
16	SUDHAKAR	20224504	SBV NO.1 MADIPUR (Evening)	1515007
17	SHWETA CHAUHAN	20220646	SKV Moti Nagar	1516018
18	PUSHPA RANI	20197292	Mundka Village-SKV	1617014
19	SUSHILA YADAV	20100842	Baprola-GGSSS	1617030
20	CHANDER SHEKHAR	20060701	G.B.S.S.S.KGI/II/VIKASPURI	1618015
21	PREETI	20171053	SKV NO 2 C BLOCK JANAK PURI	1618022
22	GEETA RANI	20040995	S co-ed sss moti bagh II Nanak pura	1719105
23	BALRAM MEENA	20224515	Pusa, IARI, 2nd Shift- GBSSS	1720005
24	NALIN KOTIA	19920136	Govt. (Co-ed) Sr. Sec. School - Sector 3, Site-1, Dwarka, New Delhi	1821203
25	BHAVNEESH SOLANKI	20230731	Govt. Boys Sr. Sec. School No.1 - Samalka, New Delhi	1821005
26	GHANSHYAM SINGH	20233364	Hari Nagar Ashram-S(Co-ed) V	1924043
27	ISHIT SEHGAL	20224499	New Rajinder Nagar-SV (Rana Pratap)	2128032
28	RAKESH KUMAR	20224510	SBV Noor Nagar	1925002
29	PRAMOD KUMAR SWARNKAR	19990749	DR. AMBEDKAR NAGAR SEC - IV	1923393
30	S.K. NAIK	20073125	Govt. Co.Ed. SSS, Narang Colony, Tri Nagar	1411037
31	JAGDISH PRASAD	19980325	Ghonda, No.1-GBSSS	1104006
32	KUNWAR PAL SINGH	19960786	SBV (Jai Prakash Narayan) East Vinod Nagar	1002007
33	MD.FIRDOUS AHMAD (Coordinator)		SCERT	