MANIPAL UNIVERSITY
JAIPUR

October-December 2025
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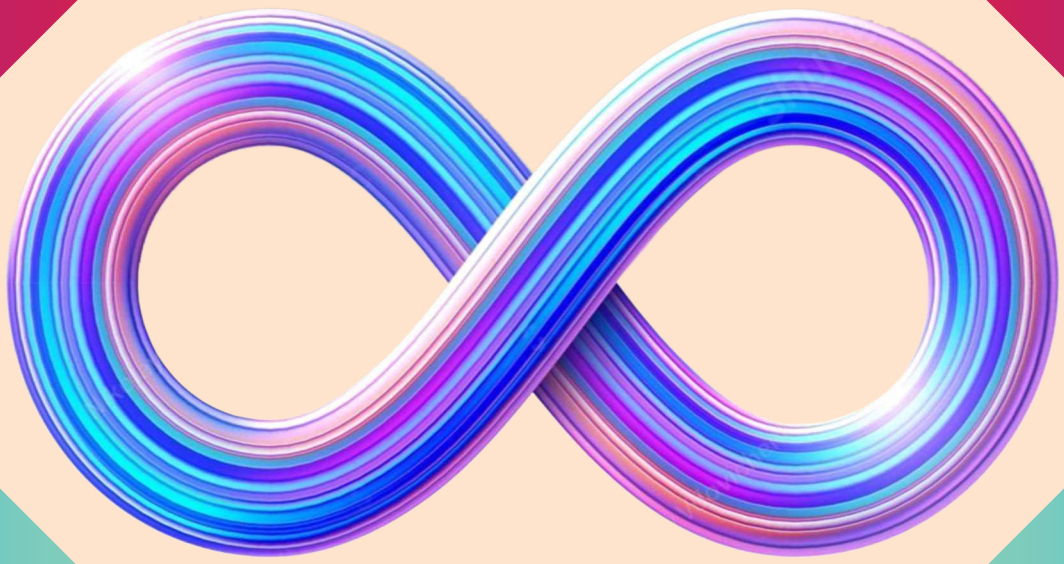
INFINITY INSIGHT

Quarterly Newsletter



Department of Mathematics and Statistics
School of Physical and Biological Sciences
Faculty of Science, Technology and Architecture

https://jaipur.manipal.edu/fos/department-of-maths.php

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Editorial Note...

"LEARN FROM YESTERDAY, LIVE FOR TODAY, HOPE FOR TOMORROW"
– ALBERT EINSTEIN

Dear Readers,

It gives me immense pleasure to present the **Eighth Edition** of our newsletter ***Infinity Insight,*** encompassing the months of **October to December 2025.** As we close the final quarter of the year, this edition not only captures the academic vibrancy of the past months but also offers an opportunity to reflect and look ahead with renewed purpose.

The concluding quarter of 2025 has been marked by notable academic engagements, research initiatives, and achievements of our faculty and students. This edition highlights these milestones, reflecting our commitment to excellence, innovation, and collaboration.

As we step into the New Year, we embrace fresh opportunities to deepen research, explore new ideas, and nurture a culture of curiosity and integrity. ***Infinity Insight*** continues to document and celebrate our intellectual and professional endeavors.

I sincerely thank all contributors, the editorial team, and our readers for their support. May the New Year inspire us to strive higher, think deeper, and work collectively toward meaningful progress.

Happy Reading and Best Wishes for the New Year!

Best Regards,
Dr Reema Jain

EDITORIAL BOARD

Chief Editor	**Dr Reema Jain**
Associate Editors	**Dr Ankur Jain** **Dr Alka Choudhary** **Dr Bhagya Shree Meena** **Dr Deepika Rajoriya**
Student Editor	**Mr Atreya Ghoshal** **(V Sem. B.Sc. (Hons.) Mathematics)**

ACCESS PREVIOUS EDITIONS

Infinity Insight_1.1	*https://flipbookpdf.net/web/site/d1fabb836f9aebc3f930a3afa58b8b1ccadb6120202403.pdf.html*
Infinity Insight_1.2	*https://www.flipbookpdf.net/web/site/0f818b331ddb9cc3b5872d810a1873afc9be3456202407.pdf.html*
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VISION & MISSION

VISION

To be a global hub for academic excellence, innovation, and human development inmathematical sciences

MISSION

- Groom students' abilities to embrace newly developing fields in statistics and mathematics.
- Emphasize the interdisciplinary collaboration for holistic problem- solving inreal-world scenarios.
- Enhance good human values for ethical and responsible research.
- Develop competent professionals in mathematics and statistics.
- Contribute to societal well-being through data-driven solutions.

EVENTS ORGANIZED

RESEARCH SCHOLARS INTERACTION PROGRAM (RSIP)

On November 11, 2025, the Department of Mathematics and Statistics organized the Research Scholars Interaction Program (RSIP) as an initiative to familiarize research scholars with the rules and regulations of the Ph.D. program, promote awareness of emerging research practices, and provide a platform for meaningful academic interaction. The event also offered expert guidance on quality research writing and postdoctoral opportunities in India and abroad, and facilitated interactive scholarly discussions. During the program, Prof. Ashima Bagaria, Associate Dean, SoPBS encouraged the scholars to remain consistent in their efforts, work diligently, and maintain a positive outlook throughout their Ph.D. journey. Prof. Reema Jain, Head of the Department of Mathematics and Statistics, highlighted the importance of research, emphasized effective presentation of results and discussions in publications, focusing on clarity, key findings, and statistical analysis.

The program concluded with an encouraging message, motivating scholars to pursue their Ph.D. journey with clarity, confidence, and sustained enthusiasm.

Convener : **Prof. Mohd. Rizwanullah**
Dr Mahesh Kumar Dubey

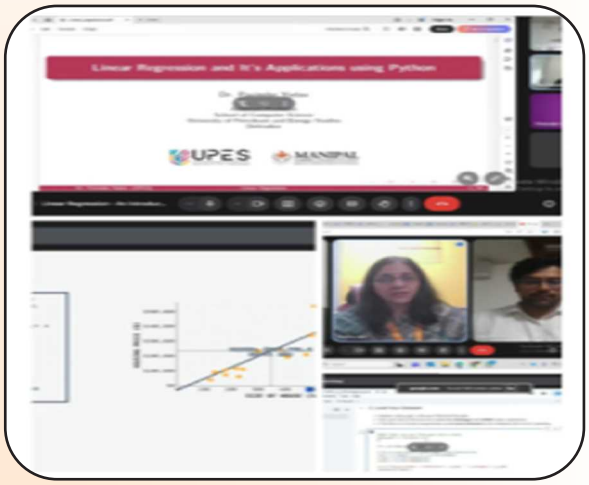
EXPERT LECTURE

Industry Expert Lecture
on
Linear Regression and its Applications using Python

(October 31, 2025)

The Department of Mathematics and Statistics organized an industry-oriented lecture delivered by Dr Pavinder Yadav, School of Computer Science (SoCS), UPES, Dehradun, on the topic "Linear Regression and Its Applications Using Python."

Convener : **Dr Vipin Kumar**

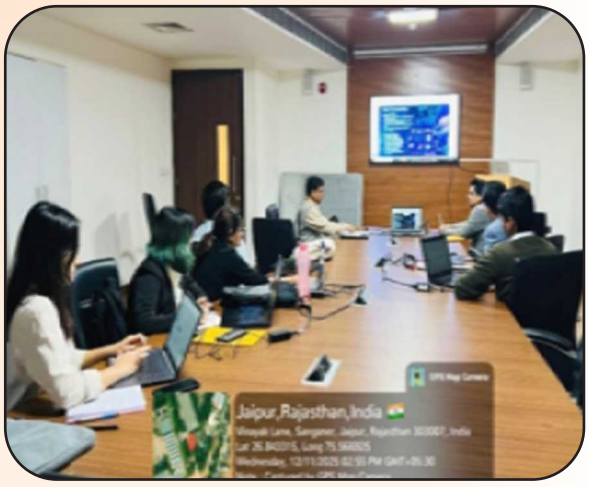


Expert Lecture
on
Data Science: Turning Statistical Insight into Global Intelligence

(November 12, 2025)

The Department of Mathematics and Statistics conducted an expert lecture on "Data Science: Turning Statistical Insight into Global Intelligence" delivered by Dr Anu Sayal, Taylor's University, Malaysia. The lecture benefited around 50 participants and covered key data science concepts with multidisciplinary case studies.

Convener : **Dr Ankur Kumar Jain**



Expert Lecture
on
Two-Sample Comparison Involving Pareto Populations: A Novel Sequential Sampling ApproachPython

(November 14, 2025)

The Department of Mathematics and Statistics convened an expert industry lecture on "Two-Sample Comparison Involving Pareto Populations: A Novel Sequential Sampling Approach" on November 14, 2025, delivered by Dr Neeraj Joshi, IIT Delhi.

Convener : **Dr Garima Agrawal**
Dr Shilpa Choudhary

AWARENESS WORKSHOP ON WOMEN EMPOWERMENT

Atreya Ghoshal and Caleb Dsouza, students of the Department of Mathematics and Statistics, volunteered for the Awareness session on Women empowerment and legal framework organized by the Department of Chemistry and Gram Asha Club. The session was led by the chief guest from the Directorate of Women Empowerment, Government of Rajasthan. The first keynote address was delivered by Dr Murari Gupta (Deputy Director), who provided an in-depth explanation of the PoSH Act 2013, highlighting its legal provisions, complaint mechanisms, and the importance of maintaining safe and respectful work environments.

RESEARCH VISIBILITY

FACULTY PUBLICATIONS

Q1 Journal Publications				
S. No.	**Name of Faculty**	**Title of Publication**	**Journal**	**Month of Publication**
1	Dr Kalpna Sharma	Membrane Pumping-Driven Electroosmotic Flow of Casson Fluid in Inclined Microchannel	Discover Applied Sciences	October, 2025
2	Dr Shilpa Chaudhary & Dr Anil Ahlawat	Magneto-Radiative Heat Transfer and Entropy Reduction for Ree Eyring Hybrid Nanofluid-Filled Porous Hexagonal Enclosure Embedded with Heated Obstacles	Physics of Fluids	October, 2025
3	Dr Reema Jain & Dr Loganathan Karuppusamy	Heat and Mass Transmission in Maxwell Nanofluid Flow over an Exponential Stretchable Surface with Swimming of Motile Gyrotactic Microorganisms	International Journal of Thermofluids	November, 2025
4	Dr Kalpna Sharma	MHD Casson Fluid Flow in C-Type Lid-Driven Cavity with Viscous Dissipation	International Journal of Thermofluids	November, 2025
5	Dr Giriraj Methi	Stability And Numerical Solutions of Higher-Order Nonlinear Time-Dependent Delay Differential Equations Using Haar Wavelet Collocation Method	Boundary Value Problems	November, 2025
6	Dr Ruchika Mehta	Exploring Multi-Physical Behavioursin Unsteady Casson Hybrid Nanofluid Flow Across aSemi-Infinite Moving Flat Surface	Results in Engineering	November, 2025
7	Dr Vivek Singh	A New Approach for Solving *E*-Differentiable Variational Programming Problem with the Objective Function and its Applications	Journal of Applied Mathematics and Computing	November, 2025
8	Dr Ruchika Mehta	Numerical Investigation of Marangoni-Driven Hybrid Nanofluid Flow through a Porous Medium with Variable Viscosity and Heat Generation/Absorption	Results in Engineering	December, 2025
9	Dr Ashok Kumar Pal	Ring Body Problem Dynamics under the Albedo Effect	International Journal of Non-Linear Mechanics	December, 2025

10	Dr Ashok Kumar Pal	Analysis of Halo and Lissajous Orbits under the Perturbation of Continued Fraction Effect	Chaos, Solitons & Fractals	December, 2025
11	Dr Ankur Jain	SpatioTemporal Model of the Growth of Pseudomonas Putida Isof Bacteria and its Pattern Formation	International Journal of Dynamics and Control	December 2025

Other Journal Publications

S. No.	Name of Faculty	Title of Publication	Journal	Month of Publication
1	Dr Ashok Kumar Pal	Dynamics and Stability in the Perturbed Photogravitational Cr3bp with Disc Structures and Continued Fractional Effects	Archive of Applied Mechanics	November, 2025

PAPER PRESENTATION

S. No.	Name of Faculty	Title	Conference	Date
1	Dr Ankur Kumar Jain	CNN based advanced Vision transformer with LoRA for Industrial defect detection	5th International Conference on Advances in Mechanical Engineering and Nanotechnology held at Kasetsart University Thailand	October 29-31, 2025

ACTIVITY UNDER MoU

JOINT RESEARCH PUBLICATION

S. No.	Name of Faculty	Title of Publication	Journal	Month of Publication
1	Dr Reema Jain & Dr Verdiana Grace Masanja (NM-AIST)	Effects of Physical Determinants in an Unsteady Blood Flow in a Stenosed Artery	Songklanakarin Journal of Science and Technology	October 2025

AWARDS & ACHIEVEMENTS

AWARDS

S. No.	Name of Faculty	Award/Recognition	Society	Date
1	Dr Monika Saini	IARS Research Excellence Award 2025	IARS during International Conference on Global Advances in Statistical Modelling, Optimization Techniques and Data Science (IC-GASMOTDS-2025)" organized by the Department of Statistics, M.D. University, Rohtak	November 28-30, 2025

ACADEMIC VISITS

S. No.	Name of Faculty	Institute/University	Purpose	Date
1	Dr Reema Jain	IIT Jodhpur	Research Collaboration	October 24-25, 2025
2	Dr Vijay Pal Poonia	Technische Universität Braunschweig, Germany	Indo–German Challenge for Sustainable Production (IGCSP) – 2025	November15-30, 2025

TALKS DELIVERED

S. No.	Name of Faculty	Event	Title of Talk	Date
1	Dr Ruchika Mehta	Five Day National Level Virtual Faculty Development Program @ Vels Institute of Science, Technology and Advanced Studies, Tamil Nadu	Review on Nano fluids: Stability and Thermal Performance Augmentation in Heat Transfer Applications	November 03, 2025
2	Dr Ashok Kumar Pal	International Preconference Online Workshop on Applied Research in Advanced Sciences and Computing @VIT Bhopal	Exploring the Circular Restricted Three-Body Problem: From Equilibrium Points to Invariant Manifolds	November 14 -15, 2025

3	Dr Monika Saini	International Conference on Global Advances in Statistical Modelling, Optimization @ Department of Statistics, M.D. University, Rohtak	Enhanced Exponential Type Ratio Estimator for Estimating Population Mean in Stratified Random Sampling under Linear Cost Function	November 28-30, 2025
4	Dr Ashish Kumar	International Conference on Global Advances in Statistical Modelling, Optimization@Department of Statistics, M.D. University, Rohtak	A Neutrosophic Framework for Reliability Evaluation of Hydroelectric Power Generation	November 28-30, 2025
5	Dr Kalpna Sharma	Faculty Development Programme @University of Engineering & Management (UEM), Jaipur, Rajasthan	Integrated Computational Mathematics, Data Science, and Statistical Modelling	December 08-12, 2025

STUDENTS' ACHIEVEMENTS

S. No.	Name of Student	Program	Achievement
1	Aakash Tiwari	I Sem. M.Sc. Mathematics	Selected for Winter Research Internship Scheme (WRIS-2025) in the Department of Mathematics & Computing, IIT (ISM) Dhanbad
2	Aditya Pawar	III Sem. B.Sc. (Hons.) Mathematics	Participated in TechFest @IIT Bombay
3	Drashti Taylor	V Sem. B.Sc. (Hons.) Mathematics	Published a Research Article and Completed Research Internship at Chhatrapati Shahu Institute of Business Education and Research, Kolhapur, Maharashtra
4	Atreya Ghoshal	V Sem. B.Sc. (Hons.) Mathematics	Participated in Poster Presentation organized by VIT and Completed Research Internship at Chhatrapati Shahu Institute of Business Education and Research, Kolhapur, Maharashtra
5	Akshita Bhati	V Sem. B.Sc. (Hons.) Mathematics	Completed Winter Internship at Coreshield Technologies, 2C-1E Research & Innovation Park, IITDelhi

COMMUNITY ENGAGEMENT

CLUB ACTIVITIES

The Department of Mathematics and Statistics organized an outreach activity on Mathematical Awareness under the aegis of the department's Tractrix Club. The activity was conducted at Prem Pathshala, Bhankrota which is run by NGO I-India for BPL children. The aim of this awareness program was to motivate children about mathematics skills and motivate about the applications of mathematics. Approximately 230 students participated in the session.

CLOTH DONATION DRIVE

The Gram Asha Club organized a donation drive from November 19–29, 2025, aimed at supporting underprivileged families through the collection of clothing. Faculty members and students of Manipal University Jaipur participated enthusiastically, contributing usable clothes in large numbers, reflecting strong social responsibility and empathy. On November 21, the collected items were distributed at Katputli Basti, where volunteers ensured fair and organized distribution through direct community interaction. The initiative, led by Club President Caleb Dsouza (student of Mathematics and Statistics), effectively translated collective intent into meaningful impact, reinforcing the values of compassion and community service.

BRIDGE TO BOARS

"Bridge to Boards" was an outreach initiative under the Gram Asha Club of Manipal University Jaipur, where student volunteer Caleb Dsouza engaged with Class 9–11 students of RajkiyaVarishth Upadhyay Sanskrit Vidyalaya to strengthen their English skills. Through interactive sessions focused on board-exam concepts, the initiative enhanced students' conceptual clarity, communication, and confidence, while also fostering social responsibility and peer-driven learning among university volunteers.

ANNOUNCEMENTS

WELCOME ANNOUNCEMENT

Dr Abdul Haseeb Ganie joined the Department of Mathematics and Statistics as an Assistant Professor (Research Track) on October 06, 2025. He earned his Post Doctorate in Mathematics from National Institute of Technology (NIT) Warangal, Ph.D. in Mathematics from Shri Mata Vaishno Devi University (SMVDU), Jammu, M.Sc. in Mathematics from Central University of Kashmir, and B.Sc. (Electronics, Mathematics, and Physics) from the University of Kashmir. He has been awarded the University Gold Medal for securing first rank in M.Sc. Mathematics at Central University of Kashmir. His research interests include fuzzy logic, artificial intelligence (AI), graph theory, and optimization. Dr Ganie has been in World's Top 2% Scientist (Stanford University and Elsevier, 2024 & 2025)

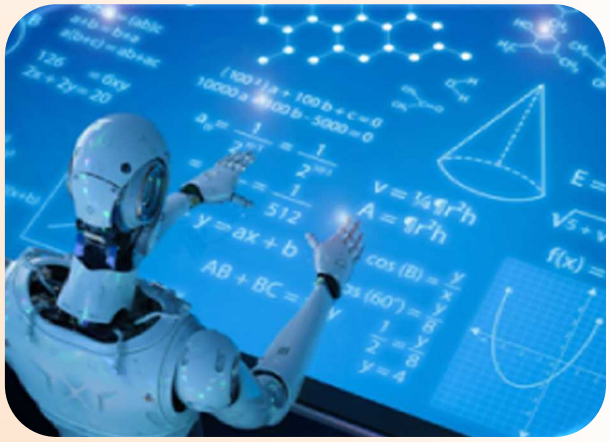
Dr Shamshad Ur Rasool joined the Department of Mathematics and Statistics as an Assistant Professor on December 26, 2025. He earned his Ph.D. in Statistics from the University of Kashmir, after completing M.Phil. in Statistics from University of Jammu, M.Sc. in Statistics from university of Kashmir and B.Sc. (Actuarial and Financial Mathematics) from IUST, Kashmir. His research interests include the generalization and unification of probability distributions, probabilistic modelling and distribution theory, development of flexible distribution families for complex data, statistical inference for generalized models, and applications to real-world phenomena.

ARTICLES

CRUNCHING NUMBERS, CRAFTING INTELLIGENCE: THE MATHEMATICAL SYMPHONY OF AI

The fusion of Mathematics and Artificial Intelligence (AI) is not a mere coincidence but a strategic Integration where Mathematical principles breathe life into intelligent systems.

Artificial Intelligence :



Artificial Intelligence is a wide-ranging branch of computer science which is concerned with the building of smart machines capable of performing tasks that typically require human intelligence. Artificial Intelligence (AI) stands at the forefront of technological advancements, transforming industries and reshaping our daily lives. Behind the scenes of this cutting-edge technology lies the backbone that empowers AI systems-mathematics. Key Mathematical Concepts which form the backbone of AI advancement:

Linear Algebra - The Pillar of AI :

At the heart of AI, linear algebra plays a pivotal role. Matrices and vectors are fundamental structures employed in representing and manipulating data. Operations like matrix multiplication enable efficient transformations and computations, essential in tasks such as image processing and deep learning.

Calculus - The Engine of Optimization :

Calculus, with its concepts of derivatives and integrals, provides the optimization engine for AI algorithms. Whether it's fine-tuning parameters in machine learning models or optimizing neural network architectures, calculus helps AI systems achieve optimal performance by minimizing errors and maximizing efficiency.

Probability and Statistics - The Guardians of Uncertainty :

In the real world, uncertainty is inevitable. Probability theory and statistics equip AI with tools to understand and handle uncertainty in data. Bayesian inference, probability distributions, and statistical analysis play crucial roles in decision-making processes, making AI systems more adaptable and robust.

Number Theory - Ensuring Data Security :

The security of AI systems is paramount, especially in applications like cryptography. Number theory, a branch of mathematics, plays a crucial role in ensuring the robustness of encryption algorithms, safeguarding sensitive information in AI-driven technology.

Conclusion:

In conclusion, the role of Mathematics in AI extends beyond the mentioned branches, encompassing a rich tapestry of mathematical disciplines. Whether modeling dynamic systems, analyzing function spaces, or strategizing in complex scenarios, mathematics continuously provides the tools for AI to evolve, adapt, and excel in its diverse applications. While AI utilizes various mathematical concepts it does not eliminate the need for human mathematician. AI presents new opportunities to develop innovative solutions and push the boundaries of what is possible.

We summarize what we found, think about where things stand now, and consider where math and AI might go from here.

PHOTO GALLERY

INSPIRED BY LIFE

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