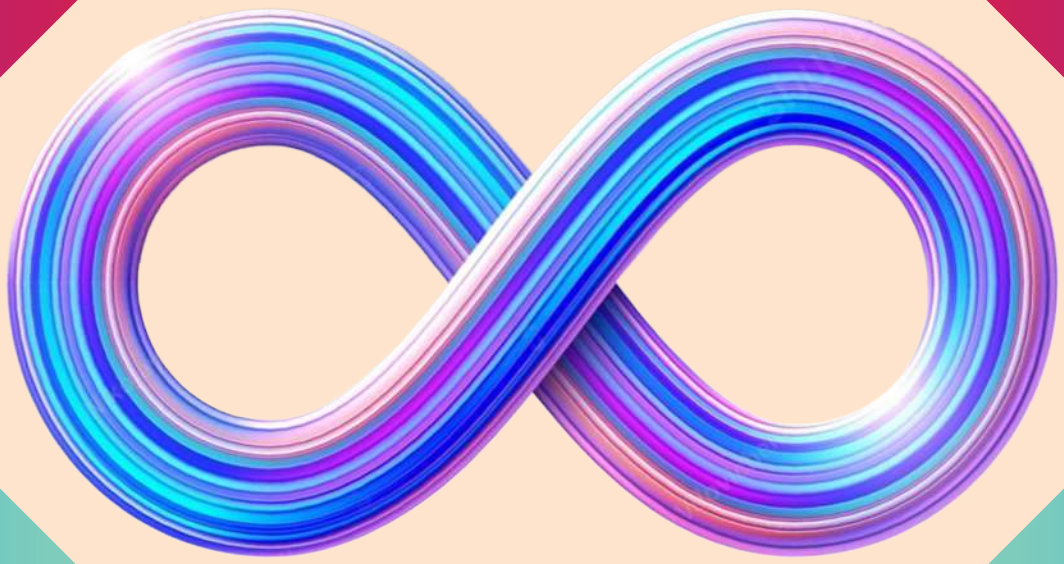
MANIPAL UNIVERSITY
JAIPUR

April-June 2025
Issue 2.2

INFINITY INSIGHT

Quarterly Newsletter



Department of Mathematics & 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...

WHAT IS MATHEMATICS? IT IS ONLY A SYSTEMATIC EFFORT OF SOLVING PUZZLES POSED BY NATURE

— Shakuntala Devi

Dear Readers,

It is with great pleasure that we present the **Sixth Edition (April–June 2025)** of our newsletter ***Infinity Insight.*** This edition brings updates on faculty research endeavors, student achievements, and glimpses of our collaborative projects and outreach activities. We remain committed to fostering a strong academic environment that inspires both curiosity and innovation.

As we are stepping into a **new academic session,** we look forward to fresh beginnings, innovative teaching practices, and exciting opportunities for research and learning. The upcoming months promise a dynamic environment that encourages inquiry, creativity, and excellence in mathematics.

We thank all contributors and readers for their continued support and invite your feedback to make this newsletter an even more engaging and informative platform.

Wishing everyone a successful and enriching academic session ahead!

Best Regards,

Dr. Reema Jain

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Mr. Atreya Ghoshal
(V Sem. B.Sc. (Hons.) Mathematics)

VISION & MISSION

VISION

To be a global hub for academic excellence, innovation, and human development in mathematics

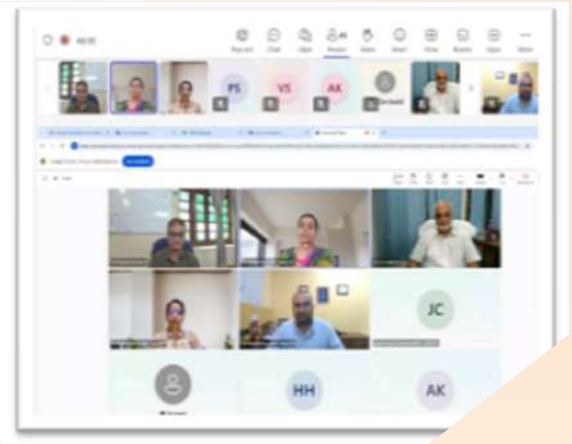
MISSION

- Develop competent professionals in mathematics and statistics.
- Foster interdisciplinary collaboration for holistic problem-solving.
- Instill good human values for ethical and responsible research.
- Contribute to societal well-being through data-driven solutions.
- Cultivate leaders with a strong sense of social responsibility.

EVENTS ORGANIZED

FACULTY DEVELOPMENT PROGRAM

The Department of Mathematics and Statistics, Manipal University Jaipur, in collaboration with the Indian Association for Reliability and Statistics (IARS), successfully organized a One Week Online Faculty Development Program (FDP) from June 23–27, 2025, on the theme Advanced Statistical Software, Methodologies, and Data Visualization for Research Excellence. The program featured 12 renowned experts from prestigious institutions including IITs, BHU, DU, KUK, PU, CURAJ, MDU, and Florida State University (USA), who delivered insightful sessions blending theory



with practical applications.Highlights included sessions on correlation analysis, hypothesis testing, statistical modeling, multivariate data analysis, time series forecasting, experimental design using R, and effective data visualization. The FDP provided a valuable platform for enhancing research skills and promoting excellence in data-driven inquiry.

The event concluded with a vote of thanks by Dr Monika Saini, expressing gratitude to all contributors for making the program a grand success.

Convener : **Dr Ashish Kumar**
Dr Monika Saini

MATHEMATICS WORKSHOP
MATH MAGIC UNPLUGGED : From Fear to Fascination

In a vibrant initiative that brought together innovation, curiosity, and the joy of discovery, the Department of Mathematics and Statistics, School of Physical and Biological Sciences, Manipal University Jaipur, in association with U.P. Public School, organized a three-day mathematics workshop titled **Math Magic Unplugged : From Fear to Fascination** from June 25 to June 27, 2025.

Day-wise Glimpse of the Workshop

Day 1: Inspiring Futures (Classes 11 & 12)

The first day focused on senior secondary students with a session on "Career Prospects and Opportunities in Mathematics."

Day 2: Ancient Math Made Fun (Class 6)

This day was designed around the playful power of **Vedic Mathematics.** The students of Class 6 were introduced to swift and fascinating techniques of mental calculation rooted in India's ancient mathematical tradition. Lively interaction, magical number tricks, and logic puzzles brought smiles and wonder, helping students overcome fear and find joy in numbers.

Day 3: Time and Patterns (Class 8)

The final day focused on **Clocks and Calendars,** where Class 8 students explored time-based puzzles, modular arithmetic, and tricks to solve calendar problems. By linking abstract arithmetic with everyday phenomena, such as timekeeping, the session sparked a fresh perspective on practical mathematics.

Throughout the workshop, a single thread bound all activities: mathematics as a friend, not a fear.

Convener : **Dr Kalpna Sharma**
Student Coordinator : **Mr Atreya Ghoshal**

RESEARCH VISIBILITY

FACULTY PUBLICATIONS

Q1 Journal Publications				
S. No.	**Name of Faculty**	**Title of Publication**	**Journal**	**Month of Publication**
1	Dr Loganathan Karuppusamy	Numerical Computation of Magnetohydrodynamic Maxwell Fluid Flow with Mixed Convection and Heat Source Effects Across an Inclined Exponential Stretching Surface	Partial Differential Equations in Applied Mathematics	April, 2025
2	Dr Ruchika Mehta	A Comparative Analysis: Heat Transfer in Thermally Stratified MHD Carreau Ternary (Cu-Al_2O_3-Tio_2) Hybrid Nanofluid Flow Across an Inclined Vertical Cylinder in Presence of Radiation	Journal of Thermal Analysis and Calorimetry	April, 2025
3	Dr Reema Jain & Dr Loganathan Karuppusamy	Irreversibility Analysis of Bioconvective Walters B Nanofluid Flow over an Electromagnetic Actuator with Cattaneo-Christov Model	Discover Applied Sciences	May, 2025
4	Dr Loganathan Karuppusamy	Influence of Homogeneous Heterogeneous Reactions on Micropolar Nanofluid Flow over an Exponentially Stretching Surface with the Cattaneo Christov Heat Flux Model	Discover Applied Sciences	May, 2025
5	Dr Reema Jain & Dr Loganathan Karuppusamy	Computational Analysis of Radiative Micropolar Fluid Flow over a Curved Stretching Sheet with Viscous Dissipation	Discover Applied Sciences	May, 2025
6	Dr Pooja Sharma	Numerical Investigation of Thermal and Mass Diffusion Characteristics in Chemically Reactive and Magnetite Cu Al_2O_3 Water-Based Hybrid Nanofluid Flow over Riga Plate	Advanced Theory and Simulation	May, 2025
7	Dr Ruchika Mehta	Numerical Study of Hybrid Nanofluid Flow and Heat Transfer Past through an Inclined Surface	Journal of Thermal Analysis and Calorimetry	May, 2025
8	Dr Loganathan Karuppusamy	Exploration of Casson Hybrid Nanofluid (Cu Al_2O_3 /EG) Flow over an Exponentially Heated Stretchy Sheet with Radiation Absorption and Viscous Dissipation: A Modified Buongiorno Model	International Journal of Thermofluids	June, 2025

9	Dr Anil Ahlawat & Dr ShilpaChaudhary	Thermo-Bioconvection in Two-Sided Lid-Driven Magneto-Hybrid Nanofluid Flow Within Porous Enclosure Containing Oxytactic Microorganisms Using Artificial Neural Network	Journal of Thermal Analysis and Calorimetry	June, 2025
10	Dr Sunil Joshi	An Enhanced Artificial Neural Network Approach for Solving Nonlinear Fractional-Order Differential Equations	Partial Differential Equations in Applied Mathematics	June, 2025
11	Dr Shilpa Chaudhary & DrAnil Ahlawat	Analysis of Photothermal Effects on Plane Waves in a Fiber-Reinforced Magneto-Thermoelastic Semiconducting Medium with Hall Current Under Initial Stress	International Journal of Numerical Methods for Heat & Fluid Flow	June, 2025
12	Dr Kalpna Sharma	Heat Interaction and Slip-Induced Flow in Carreau Hybrid Nanofluid Dynamics	Journal of Thermal Analysis and Calorimetry	June, 2025
13	Dr Ashish Kumar & Dr Monika Saini	Efficient Stochastic Framework for Availability Improvement of Stone Door Frame Manufacturing Plants Using Artificial Neural Networks and Regression Analysis	Egyptian Informatics Journal	June, 2025

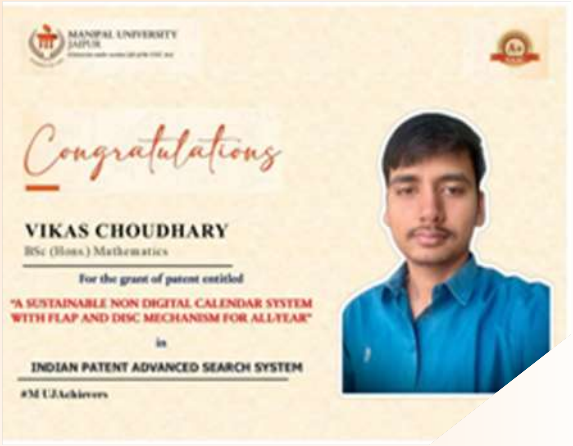
Other Journal Publications

S. No.	Name of Faculty	Title of Publication	Journal	Month of Publication
1	Dr Loganathan Karuppusamy	Shape Factor Analysis of Water and Aluminium Oxide Nanoparticles in a Porous Medium with Slip Effects	Chemical Physics Impact	June, 2025
2	Dr Monika Saini & Dr Ashish Kumar	Mathematical Modeling and Performance Optimization of Stock Preparation Unit in Paper Manufacturing Plants Using GA and PSO	Brazilian Journal of Biometrics	April, 2025
3	Dr Monika Saini & Dr Ashish Kumar	Reliability Characteristics Analysis of Ready-Mix Cement Plant Under Classical and Bayesian Inferential Framework: A Comparative Analysis	Brazilian Journal of Biometrics	April, 2025
4	Dr Anil Ahlawat	Impacts of Sinusoidal Heat Flux and Embraced Heated Rectangular Cavity on Natural Convection within a Square Enclosure Partially Filled with Porous Medium and Casson-Hybrid Nanofluid	Open Physics	May, 2025

5	Dr Ashish Kumar & Dr Monika Saini	Stochastic Modeling and Availability Optimization of Biscuit Manufacturing Plants using Markovian Approach and Hybrid GA-PSO Algorithm	Discover Sustainability	June, 2025
6	Dr Ruchika Mehta	Numerical Analysis on MHD Heat Transfer of Casson Hybrid Nanofluid(Cu-Al_2O_3/H_2O) Flow Across an Inclined Moving Plate in Presence of Radiation	Canadian Journal of Physics	June, 2025
7	Dr Mohammad Rizwanullah	Optimization of Multi-Capacitated Closed-Loop Supply Chain Network Problem with Multi-Products and Multi-Time Period Using SMA	Journal of Dynamics and Control	June, 2025
8	Dr Sunil Joshi	Some Novel Inequalities via Tempered Fractional Integral Operator and Their Applications	Palestine Journal of Mathematics	June, 2025
Book Chapter/Conference Publications				
S. No.	**Name of Faculty**	**Title of Publication**	**Journal**	**Month of Publication**
1	Dr Ankur Jain	Investigation of Various Transfer Learning Techniques for Classifying Alzheimers Disease Dataset	Advanced Computing Solutions for Healthcare	April, 2025

INNOVATION/ IPR

Mr Vikas Choudhary, a student of B.Sc. (Hons.) Mathematics at Manipal University Jaipur, has been granted a patent for its innovative design titled **A Sustainable Non-Digital Calendar System with Flap and Disc Mechanism for All-Year.** It is published in the Indian Patent Advanced Search System on May 23, 2025. This achievement showcases his creative approach to sustainable design and practical utility.



AWARDS & ACHIEVEMENTS

Ph.D. AWARDED

S. No.	Name of Research Scholar	Name of Supervisor	Title of Thesis	Date of Award
1	Ravi Choudhary	Dr Ashish Kumar	Classical and Bayesian Analysis of Repairable Systems with Arbitrary Failure and Repair Distributions	May 22, 2025
2	Pallavi Malik	Dr Kalpna Sharma	Analysis of the Parameters Influencing Different Properties of the Conducting Fluids	May 30, 2025
3	KajalBhaskar	Dr Kalpna Sharma	Thermal Analysis of Hybrid Nanofluids Through Various Geometries	June 02, 2025

TALKS DELIVERED

S. No.	Name of Faculty	Event	Title of Talk	Date
1	Dr Ruchika Mehta	International Conference on Mathematical and Statistical Modeling, Simulation, and Optimization of Energy Systems (ICMSOES 2025) @The University of Bengkulu, Indonesia.	Computational Analysis of Thermophoresis and Brownian Motion Effects in Bioconvective MHD Casson Hybrid Nanofluid ($Ag–Al_2O_3/H_2O$) Flow Past a Moving Slender Needle	June 17-18, 2025
2	Dr Kalpna Sharma	Exploration of Unsteady Second Grade Trihybrid Nanofluid flow between Parallel discs @North Eastern Regional Institute of Science and Technology Arunachal Pradesh	International Conference on Mathematical Sciences and Computing Innovations and Applications	June 26-28, 2025

SESSION CHAIRED

S. No.	Name of Faculty	Event	Session Detail	Date
1	Dr Mohammad Rizwanullah	4th International Conference on Computational Modelling, Simulation and Optimization (ICCMSO-2025) @ Singapore	Via Online Mode	June 20-22, 2025

ACADEMIC VISIT

S. No.	Name of Faculty	Institute/University	Purpose	Date
1	Dr Reema Jain	IIT Guwahati	Research Collaboration	May 20-23, 2025

EXTRACURRICULAR INVOLVEMENT

S. No.	Name of Faculty	Event	Organized by	Date
1	Dr Ankur Kumar Jain	Rajasthan Divas Bharat Bharti	Rajasthan University Jaipur and Bharat Bharti	April 12, 2025

STUDENTS' ACHIEVEMENTS

S. No.	Name of Student	Program	Achievement	Date
1	Vikas Choudhary	IV Sem. B.Sc. (Hons.) Mathematics	Deans List for Excellence in Academics	April, 2025
2	Atreya Ghoshal	IV Sem. B.Sc. (Hons.) Mathematics	Received Appreciation Letter from the Principal of Mahatma Gandhi Government School, Bagru recognizing his dedicated teaching service over a three-week voluntary engagement at the school	April25, 2025
3	Drashti Tailor	IV Sem. B.Sc. (Hons.) Mathematics	Attended Four-Day Online Workshop on Qualitative Data Analysis using NVIVO, organized by LekSha Research Centre, Gandhinagar, Gujarat	June10-13, 2025
4	Atreya Ghoshal	IV Sem. B.Sc. (Hons.) Mathematics	Attended International Faculty Development Programme "Generative AI for Thought Leadership in Academia and Research"	June11 17, 2025
5	Drashti Tailor	IV Sem. B.Sc. (Hons.) Mathematics	Attended Six-Day Online Workshop on Structural Equation Modelling using SmartPLS4, organized by LekSha Research Centre, Gandhinagar, Gujarat	June16-21, 2025

6	Atreya Ghoshal	IV Sem. B.Sc. (Hons.) Mathematics	Completed the course *"Write Smarter with Overleaf and LaTeX"* offered by Fred Hutchinson Cancer Center through Coursera	June 19, 2025
7	Navya Negi	IV Sem. B.Sc. (Hons.) Mathematics	Completed the course *"Data Science Methodology"* offered by IBM through Coursera	June 21, 2025
8	Drashti Tailor	IV Sem. B.Sc. (Hons.) Mathematics	Completed the course *"Write Smarter with Overleaf and LaTeX,"* offered by Fred Hutchinson Cancer Center through Coursera	June 27, 2025
9	Atreya Ghoshal	IV Sem. B.Sc. (Hons.) Mathematics	Completed the course *"Introduction to Programming with MATLAB"* offered by Vanderbilt University through Coursera	June 30, 2025

CLUB ACTIVITY

On April 08, 2025, as part of World Health Day celebrations, the Biotech Club organized a special event highlighting the importance of healthy living. Atreya Ghoshal from the Department of Mathematics and Statistics showcased his creative talents by directing and performing in the play "***Din Swasth Jeevan ka.***" His impactful storytelling and stage presence brought health awareness to life, reflecting the department's spirit of interdisciplinary engagement and social responsibility.

FAREWELL CELEBRATION FOR THE CLASS OF 2025

On April 24, 2025, the Departments of Physics, Chemistry, Mathematics, and Statistics at Manipal University Jaipur came together to host a heartfelt and memorable Farewell Ceremony for the graduating Class of 2025 at the Smt. Sharda Pai Auditorium.

The event was not merely a goodbye, but a grand celebration of the students' journey, achievements, and the lasting bonds they've created over the years. The ceremony began with a warm welcome, followed by addresses from respected faculty members, who reminisced about the growth of the students and shared words of encouragement for their future endeavours. The event featured a series of engaging cultural performances, heartfelt speeches, fun awards, and a nostalgic look back at memories made on campus.

The event concluded with a collective message of unity and hope—a reminder that while this farewell marks the end of a beautiful phase, it is also the beginning of countless new opportunities and adventures.

As the Class of 2025 steps out to conquer the world, the university stands proud, knowing that its legacy continues through the brilliance and spirit of its alumni.

ARTICLES

WHAT IF WE LIVED IN A MATHEMATICALLY LITERATE SOCIETY?

- By Aditya Panwar

Imagine a world where everyone—regardless of age, background, or profession—possessed a strong understanding of fundamental mathematical ideas. Not just as a subject in school, but as a universal language of logic, numbers, patterns, and probability. How different would society be?

For starters, scams would vanish. With a solid grasp of data interpretation, misleading statistics and "too-good-to-be-true" schemes would no longer fool the masses. Mathematical literacy would act as a vaccine against misinformation, fostering smarter decisions and a more informed public.Finance, too, would transform. Concepts like budgeting, interest rates, and investments wouldn't intimidate people. Fewer would fall into debt traps or be misled by financial jargon. A math-literate population could close the gap of economic inequality by promoting financially independent and secure communities.

Education would also flourish. Mathematics would cease to be a barrier to STEM careers. Instead, it would be a tool for discovery, curiosity, and creativity. Artistic domains like music, design, architecture, and gaming would benefit too, because at their core, they are deeply mathematical.Perhaps most importantly, democracy would be stronger. Citizens would ask better questions, challenge political narratives, and demand evidence. Public debates on topics like taxation, healthcare, and education would be rooted in clarity rather than confusion.

A mathematically literate society would not only be smarter, but also more just, rational, and innovative. As Ramanujan once said, *"To preserve my brain, I must have mathematics—it is my food and drink."* If we all shared that mindset, the world would indeed be a different place.

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WHERE POETRY MEETS MATHEMATICS: A SANSKRIT VERSE AND THE KNIGHT'S TOUR

- By Atreya Ghoshal

In a remarkable overlap of ancient poetry and combinatorial logic, Sanskrit scholars composed verses that encode a complete Knight's Tour - a problem in chess theory that requires a knight to visit all 64 squares of a board exactly once. Two such verses, which are sometimes associated with the school of Rudrata, are:

sthitāsamayarājatpāgatarāmādakegavi |
duraṁsasāṁsannatādāsādhyātāpakarāsarā ||

And here is the stroke of genius : the first verse is written sequentially across **half of the chessboard (32 squares).** Then the verse is repeated to populate the remaining 32 squares, completing the board with a poetic circle. The second verse, however, is his travelogue to the knight.

The knight must trace the order of the positions indicated by the letters of the second verse, twice, covering every square exactly once and never leaving the board. Each letter encodes a square, and the knights' L-shaped moves trace the encoded path.

This verse was composed centuries prior to the use of graph theory and its use to solve algorithms. Indian Rishis have always been able to encode their thoughts in their language, embedding logic with linguistic beauty. It's not a line of verse - it's a riddle in the code of the gods.

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PHOTO GALLERY

एक मंच पर 20 राज्यों के निवासियों ने पेश की प्रादेशिक लोक संस्कृति की झलकियां

भारत भारती जयपुर एवं राजस्थान विश्वविद्यालय के तत्वावधान में मानविकी पीठ सभागार में सजी सांस्कृतिक संध्या, एक भारत-श्रेष्ठ भारत' थीम पर हुआ आयोजन

लोह पुरुष सरदार पटेल की सार्धशताब्दी पर कार्यक्रम

'एक भारत श्रेष्ठ भारत' थीम में दिखी देश की लोक संस्कृति

समाचार जगत न्यूज

जयपुर. लोह पुरुष सरदार वल्लभभाई पटेल की सार्धशताब्दी के उपलक्ष्य में संगठन भारती जयपुर के तत्वावधान में 'एक भारत श्रेष्ठ भारत' थीम पर मानविकी पीठ सभागार में एक सांस्कृतिक संध्या का आयोजन किया गया। इसमें 20 से अधिक राज्यों के निवासियों ने अपने-अपने प्रदेश की लोक संस्कृति की झलक पेश की। गायन, वादन और नृत्य की विभिन्नताओं को एकाकार करते हुए दी गई इन प्रस्तुतियों में जहां भारत के प्रांतों की वेशभूषा, खान-पान, रीति-रिवाज और लोक त्यौहारों को जीवंत किया गया। मुख्य अतिथि राज्यपाल हरिभाऊ बागडे, और विशिष्ट अतिथि भारत भारती के राष्ट्रीय अध्यक्ष विनय भाई पन्नाले रहे। अध्यक्षता प्रोफेसर केवी शर्मा ने की। कार्यक्रम संयोजक अशोक मित्तल ने बताया कि गणेश वंदना से शुरू हुए कार्यक्रम में राजस्थान, यूपी, बिहार, आंध्रप्रदेश, तमिलनाडु आदि के कलाकारों ने संगीत-नृत्य की छटा बिखेरी।

INSPIRED BY LIFE

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