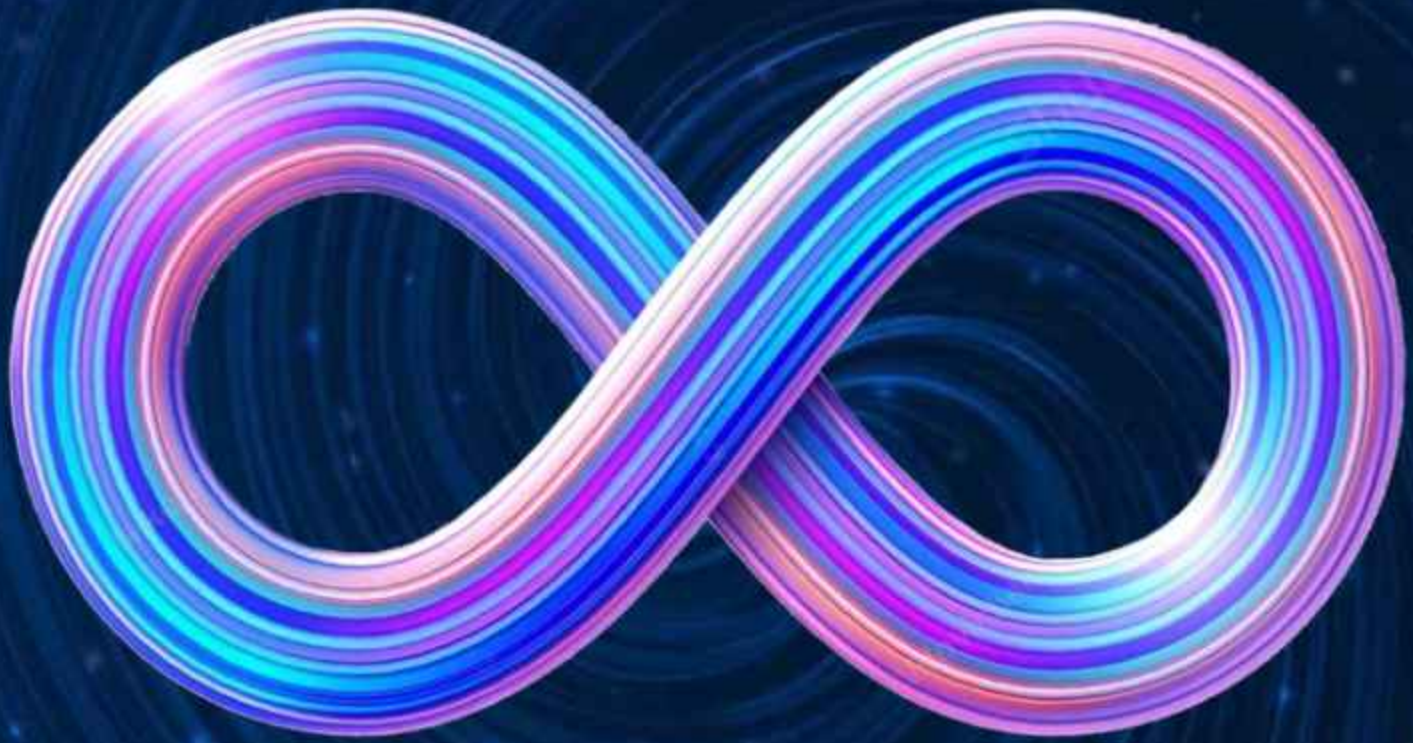
MANIPAL UNIVERSITY
JAIPUR

January-March 2024
Issue 1.0

INFINITY INSIGHT

Quarterly Newsletter



Department of Mathematics & Statistics
School of Basic Sciences
Faculty of Science

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

IN THIS ISSUE....

VISION & MISSION OF THE DEPARTMENT

VISION

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

MISSION

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

Message

President

I wish to congratulate the Department of Mathematics & Statistics, Faculty of Science, Manipal University Jaipur for releasing its newsletter Infinity Insight. The Department of Mathematics & Statistics is continuously striving towards the intellectual and strategic growth of the University and hope that this newsletter will act as the mark of achievements, capabilities and strengths of the department. I would like to extend my appreciation to the department, its faculty members, and the editorial board for their efforts on making the first edition of this newsletter a success. We hope to establish a trend of learning, expressing and inspiring each other.

Happy Reading!!

Dr. G. K. Prabhu
President
Manipal University Jaipur

Message

Pro President

It gives me immense pleasure to note that the Department of Mathematics & Statistics, Faculty of Science, Manipal University Jaipur is bringing out its 1st edition of the quarterly newsletter Infinity Insight. The newsletter has endeavored to provide an opportunity to the faculty members and students to delve deep into the realm of research & development apart from their curriculum. It also works like a mirror which reflects the clear picture of various activities undertaken by the department and also helps in developing writing skills amongst students and faculty members.

I would like to extend my heartiest congratulations to the department of Mathematics & Statistics, and the editorial board for bringing out the newsletter.

Commodore (Dr.) Jawahar M Jangir
Pro President
Manipal University Jaipur

Message

Registrar

On behalf of Manipal University Jaipur, I congratulate Department of Mathematics & Statistics for their initiative in publishing the quarterly newsletter Infinity Insight. Nowadays, academics is not just about classroom learning. Students must perpetually hone their skills by keeping abreast with the world around. Thus, it will help in building up teamwork, which is very important in today's highly competitive environment, and promote a culture of documentation. I am confident that it would generate a profound impression on readers due to its prominence and depth.

I wish good luck to the earnest endeavors of Department of Mathematics & Statistics.

Dr. Nitu Bhatnagar
Registrar
Manipal University Jaipur

Message

Dean Faculty of Science

Excellence is a Continuous Process and not an Accident
- A.P.J Abdul Kalam

An educational institution never sleeps. It is like a vast ecosystem that keeps breathing, generating life and triggering responses. Growth is essential. Manipal University Jaipur is growing, and we are growing along with it. I am extremely delighted and proud to release the inaugural issue of the newsletter Infinity Insight of the Department of Mathematics & Statistics, Faculty of Science, Manipal University Jaipur. The newsletter is always a testimony to all the quality teaching and research happenings in the department and plays a vital role in the growth. I look forward to reading about the various activities, achievements, and articles on recent advancements in the newsletter.

My heartiest congratulations to the entire department, all the contributors and editorial board for their efforts on making this edition of the newsletter a success.

Wishing the best for achieving newer heights in the coming days!!

Dr. Lalita Ledwani
Dean, Faculty of Science
Manipal University Jaipur

Message

Head of Department

I feel ecstatic to present the first issue of Infinity Insight, the quarterly newsletter of the Department of Mathematics & Statistics. With a setup of 33 faculty members, the department is working hard to achieve the goals of the University of providing quality education and knowledge. This newsletter showcases the activities, efforts and achievements of the department.

Mathematics, often referred to as the language of the universe, is limitless in its potential to unlock the secrets of the world around us. It is our collective mission to instill a love for the subject, inspire curiosity, and nurture the boundless talents within our department. I encourage each member of the family to actively participate in departmental activities. Let us embrace the infinite possibilities that mathematics presents and work together to push the boundaries of our understanding.

I am thankful to the Editorial Team for putting in their consistent efforts to bring this issue of Infinity Insight. I hope that you all will have a pleasant experience while reading this issue.

Wishing you all a rewarding and intellectually stimulating academic year.

Dr. Kalpna Sharma
Head, Dept of Mathematics & Statistics
Manipal University Jaipur

Message

Editor

"The most important lesson Mathematics teaches us is the will to never give up as every problem has a solution."

Dear Readers,

Warm greetings from the Editorial Board!

It gives me immense pleasure to introduce the first edition of Infinity Insight - a quarterly newsletter of the Department of Mathematics & Statistics. The name of newsletter - Infinity Insight represents the concept of eternity and endless possibility which is very aptly sums up the prospects of our University.

The intend of this newsletter is to disseminate the information about our department. Also, I believe that it will provide a proper acknowledgement to all those who work consistently and acquiring results. This maiden issue is a brief account of all the remarkable activities & achievements of our students and faculty members during the first quarter of 2024.

I am immensely thankful to the MUJ leadership, Dean and Head of the Department for providing support, encouragement and a free hand in this endeavor. I would also like to place on record my gratitude and heartfelt thanks to my editorial team for their untiring efforts in bringing the publication a success.

I hope that the readers will find the issue informative and useful. It would be great to hear your comments and suggestions!

Dr. Reema Jain
Dept of Mathematics & Statistics
Manipal University Jaipur

EDITORIAL BOARD

Chief Editor

Dr. Reema Jain

Associate Editors

Dr. Ankur Jain

Dr. Ayush Tripathi

Dr. Riya Jain

Student Editor

Mr. Surya Prakash

(IV Sem. B.Sc. (Hons.) Mathematics)

EVENTS ORGANIZED

Workshop/ Conference	Title	Date	Organized by
Workshop	**Enhancing Research Skills** Resource Person: **Dr Mangey Ram** *Research Professor* & *Dean* (*Research Collaborations*) at *Graphic Era Deemed to be University, Dehradun, India*	09-Jan-24	Dr Anamika Jain

RESEARCH VISIBILITY

STUDENT PUBLICATIONS

Q1 Journal Publications					
S. No.	**Name of Scholar**	**Name of Supervisor**	**Title of Publication**	**Journal**	**Month of Publication**
1	Pooja Agarwal, K. Loganathan	Dr. Reema Jain	Entropy Optimization of ChemicallyReactiveBioconvective Powell-Eyring Nanofluid Stratified flow Over a Riga Plate: A non-Fourier Heat and Mass Flux Modeling	Partial Differential Equations in Applied Mathematics (Elsevier)	Jan-2024
2	K. Loganathan	Dr. Reema Jain	Peristaltic transport of Sutterby nanofluid flow in an inclined tapered channel with an artificial neural network model and biomedical engineering application	ScientificReports (Nature)	Jan-2024
3	K. Loganathan	Dr. Reema Jain	Modeling of two-stage anaerobic onsite wastewater sanitation system to predict effluent soluble chemical oxygen demand through machine learning	Scientific Reports (Nature)	Jan-2024
4	K. Loganathan	Dr. Reema Jain	Entropy generation analysis on zero mass flux effects of nonlinear mixed convective Williamson nanofluid flow with Christov-Cattaneo heat flux	Journal of Applied Mathematics and Computing (Springer Nature)	Feb-2024
5	K. Loganathan	Dr. Reema Jain	Time-dependent Darcy Forchheimer flow of Casson hybrid nanofluid comprising the CNTs through a Riga plate with nonlinear thermal radiation and viscous dissipation	Nanotechnology Reviews (Degruyter)	Mar-2024

FACULTY PUBLICATIONS

Q1 Journal Publications				
S. No.	**Name of Faculty**	**Title of Publication**	**Journal**	**Month of Publication**
1	Dr Ashish Kumar	Performance optimization of hydroelectric power-plants using computational intelligence techniques	International Journal of Information Technology	Mar-2024
2	Dr Ashok Kumar Pal	Analysis of albedo and disc effects in the generalized restricted four-body problem	Advances in Space Research (Elsevier)	Mar-2024
3	Dr Garima Agarwal	A hybrid approach for non-linear fractional Newell-Whitehead-Segel model	Ain Shams Engineering Journal, Science Direct	Jan-2024
4	Dr Giriraj Methi	Two efficient numerical techniques for solutions of fractional shallow water equation	Partial Differential Equations in Applied Mathematics (Elsevier)	Jan-2024
5	Dr Reema Jain	Entropy optimization of chemically reactive bioconvective Powell-Eyring nanofluid stratified flow over a Riga plate: A non-Fourier heat and mass flux modeling	Partial Differential Equations in Applied Mathematics (Elsevier)	Jan-2024
6	Dr Vijay Shankar Sharma	A novel fractional-order stochastic epidemic model to analyze the role of media awareness in the spread of conjunctivitis	Health Care Analysis (Elsevier)	Jan-2024
Other Publications				
S. No.	**Name of Faculty**	**Title of Publication**	**Journal**	**Month of Publication**
1	Dr Ankur Jain	Green hydrogen as a clean energy resource and Its applications as an engine fuel	Engineering Proceedings	Jan-2024
2	Dr Ashish Kumar	Stochastic modeling and performance optimization of Marine power plant with Metaheuristic algorithms	Journal of Marine Science and Application	Jan-2024
3	Dr Ashish Kumar	Metaheuristic algorithms and their applications in performance optimization of cyber-physical systems having applications in logistics	International Journal of System Assurance Engineering and Management	Feb-2024

4	Dr Ashok Kumar Pal	Dynamics of the perturbed restricted three-body problem with quantum correction and modified gravitational potential	Archive of Applied Mechanics, Springer	Feb-2024
5	Dr Laxmi Poonia	Inhomogeneous string cosmological model of Bianchi type-I in general relativity	Proceedings of the Indian National Science Academy	Feb-2024
6	Dr Laxmi Poonia	The anisotropic string cosmological model of Bianchi type I in general relativity	Proceedings of the Indian National Science Academy	Feb-2024
7	Dr Laxmi Poonia	Bianchi type VI0 cosmological model for expanding universe with flat potential in general relativity	Proceedings of the Indian National Science Academy	Feb-2024
8	Dr Mohammad Rizwanullah	Optimization of stochastic traveling salesman problem using genetic algorithm with Roulette Wheel method	Journal of Global and Stochastic Analysis	Jan-2024
9	Dr Pooja Sharma	Heat transfer analysis of Cu H2O/Al2O3 H2O nanofluid flow in wavy/microchannels: A review	Modern Physics Letters B	Mar-2024
10	Dr Ram Naresh Saraswat	Novel generalized entropy measures characteristics associated with code-word length	Contemporary Mathematics	Jan-2024
11	Dr Ruchika Mehta	Numerical study of triple diffusive mhd radiative casson fluid flow over a vertical wall with chemical reaction & heat source/sink Impacts	Journal of Computational Analysis and Applications	Feb-2024
12	Dr Vijay Shankar Sharma	Bifurcation patterns in a discrete predator prey model incorporating Ratio-Dependent functional response and prey harvesting	Qualitative Theory of Dynamical Systems, Springer	Jan-2024
13	Dr Virendra Singh Chouhan	Under Quasi non-expansive mapping generalization of weak convergence and fixed point in Hilbert space	Journal of Computational Analysis and Applications	Feb-2024

Conference Publications

S. No.	Name of Faculty	Title of Publication	Conference Proceeding	Month of Publication
1	Dr. Pooja Sharma	Radiative and chemically reactive MHD fluid flow through two region heated vertical channel with heat and mass transfer	AIP Conf. Proc. 3025, 030010 (2024)	Mar-2024

INNOVATION/ IPR

S.No.	Title of Invention	Published/ Granted	Inventor	Published in/Granted by	Date
1	EfficientLogarithmic Type Estimators under Stratified Random Sampling	Published	Dr Ashish Kumar, Dr Monika Saini	Copyright Office of India	24-Jan-2024

AWARDS & ACHIEVEMENTS

Ph.D. AWARDED

S.No.	Name of Research Scholar	Name of Supervisor	Title of Thesis	Date of Award
1	Ravindra Kumar	Dr. Ruchika Mehta	Analysis of Fluid Flow and Heat Transport Problems through Stretching Sheet in Presence of Porous Medium	25-Jan-2024
2	Ruchi Jain	Dr. Ruchika Mehta	Heat and Mass Transport Phenomena of Fluid Flow through various Geometries in Presence of Porous Medium	23-Feb-2024
3	Sunil Kumawat	Dr. Laxmi Poonia	Study of Inflationary Universe using Cosmological Models	07-Mar-2024
4	Ramgopal Dhaka	Dr Bhoopendra Pachauri & Dr Anamika Jain	Novel Software Reliability Growth Models Considering Uncertainty Using Soft-Computing and Other Techniques	18-Mar-2024

FACULTY AWARDS

S.No.	Name of Faculty	Award	Society	Date
1	Dr Ashish Kumar	Dr. M.N. Deshpande Memorial Award	Indian Society for Probability and Statistics (ISPS)	08-Feb-2024

INVITED TALKS DELIVERED

S.No.	Name of Faculty	Talk	Event	Date
1	Dr Kalpna Sharma	Significance of Chemical reaction and Joule Heating on Viscoelastic Walters B fluid towards a vertical stretching sheet	30th International Conferenceof International Academy of Physical Sciences(RASTS-2024) atJ.C. Bose University of Science & Technology, YMCA, Faridabad, India	28-Feb-2024
2	Dr Reema Jain	Women Capacity Enhancement in research with application of Artificial Intelligence and Fluid Mechanics	InternationalWomen's Day at NM-AIST, Tanzania	08-Mar-2024

WELCOME ANNOUNCEMENT

Name of Faculty	Date of Joining	Educational Qualifications	Research Interests
Dr. Riya Jain	18-Jan-2024	• Ph.D. (BITS Pilani, Pilani Campus, Pilani Rajasthan) • M.Sc. (Applied Mathematics) (South Asian University, New Delhi) • B.Sc. (H) Mathematics (Kamala Nehru College, University of Delhi, New Delhi)	Numerics of Partial Differential Equations, Finite Element Methods, Hybridizable Discontinuous Galerkin Method.

UPCOMING EVENTS

S.No.	Event	Organized by
1	4th International Conference on Recent Advances in Material Science & Computational Techniques (RAMSACT 2024) Conference website:http://ramsact.in	Faculty of Science in collaboration with the Department of Biotechnology & Chemical Engineering, Manipal University Jaipur (MUJ)
2	4th International Conference on Mathematical Modelling, Computational Intelligence Techniques, and Renewable Energy (MMCITRE2024) Conference website: https://mmcitre.com/home.html	Department of Mathematics and Statistics, Manipal University Jaipur in association with the University of Barcelona, Spain, UCSC, Chile, UPTC, Columbia, RACEF, Spain, and Forum for Interdisciplinary Mathematics, Gujarat Chapter.
3	2nd International Conference on Recent Advances in Fluid Mechanics & Nanoelectronics (ICRAFMN-2024) Conference website: https://www.icrafmn2024.com/	Department of Mathematics and Statistics,Manipal University Jaipur in association with Manipal Institute of Technology Bengaluru and the National Institute of Technology Uttarakhand.

ARTICLES

The Maths of Carrom

Carrom is an indoor game of Indian origins. On a square board with pockets in each corner, there are exactly 9 white discs, 9 black discs, and 1 red piece called the Queen. They are struck by a striker disc towards the pocket holes. In the beginning, these 19 pieces are arranged inside a circle inscribed in the middle of the board: the Queen in the centre, 6 pieces surrounding the Queen, and the remaining 12 pieces forming an outer ring of a closely packed structure. The numbers in the following sequence: 1, 7, 19, 37, 61… are called centered hexagonal numbers, or simply 'hex' numbers, where the succeeding nt□term is given by $Hn=3n2+3n+1$. If we add up the hex numbers we get the following sequence of cubes: 1, 8, 27, 64, 125, 216… If we add up the hex numbers, we get the following sequence of cubes: 1, 8, 27, 64, 125, 216... This follows immediately from the fact that Hn=(n+1)3-n3 gives a telescoping sum. There is a curious connection because each hex number can be arranged as three faces of a cube. This configuration is, incidentally, the most efficient way to pack a circle, wasting only 9.31 percent of space. Hexagonal close packing has many practical applications, from the reflecting mirrors of the James Webb space telescope to combining individual wire strands into a cable.

Tanay Choughule

Quality Matters Not Quantity

Todays era is a time of modern technologies and development. Artificial intelligence plays a vital role to develop new tools and techniques for the young generation to tackle current problems of real and virtual world. Research is a task of finding the gaps, limitations present not only in the current literature but also find innovative ways and skills to make a better future world. Facilities given by many Universities result making us in a race of creating a bulk of literature in the form of publications, patents, copyrights, books. At the same time, the vague or unimportant content is also entering in the world cloud which is useless for the next generation and society. The quality of publications considers a tough review of literature before going for the confirmation of publication. So, focus on the quantity of publications is just a bad practice for researchers now a days. Our target should always be a good quality researcher rather than a researcher having many papers in a dustbin.

Best wishes for all to be an innovative thinker.....

Dr. Ankur Kumar Jain

PHOTO GALLERY

INSPIRED BY LIFE

Jaipur-Ajmer Express Highway, Dehmi Kalan, Near GVK Toll Plaza, Jaipur-303007 (Raj.) | Phone: 0141 399 9100
http://3.108.105.201/manipal-jaipur/university/index.php