



**INDIAN INSTITUTE
OF TECHNOLOGY**
(INDIAN SCHOOL OF MINES)
DHANBAD

Legacy that inspires the future

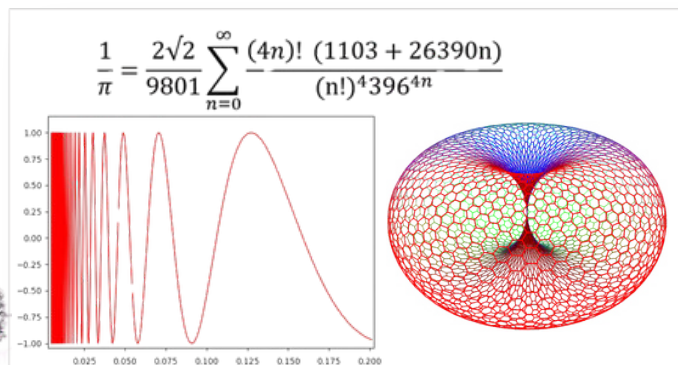
JULY-SEPTEMBER 2026

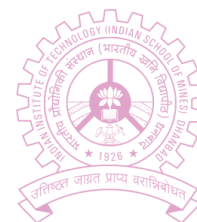
VOL. 3 | ISSUE 3



GANANAM

A Quarterly Newsletter of
Department of Mathematics and Computing





Contents

01	Message From HOD	03
----	------------------	----

02	Department Events	04 - 05
----	-------------------	---------

03	Research & Publications	06 - 07
----	-------------------------	---------

04	Faculty Achievements	07
----	----------------------	----

05	NPTEL this Semester	08
----	---------------------	----

06	Students Achievements	09
----	-----------------------	----

07	Invited Talks	10
----	---------------	----

08	Mathematics and Computing News	11
----	--------------------------------	----

09	Faculty Profiles	12 - 14
----	------------------	---------



Message from the Head of Department



I am delighted to present Volume 3, Issue 3 of GANANAM, the quarterly newsletter of the Department of Mathematics & Computing. This issue highlights the Department's recent activities, achievements, and continued commitment to academic excellence.

NPTEL courses are playing a key role in enhancing students' subject knowledge and promoting self-paced learning beyond the conventional curriculum. Recognizing their importance in strengthening academic and professional competencies, the department is consistently offering NPTEL courses to encourage students to explore diverse learning opportunities. In addition to the courses currently offered, several new courses have been approved for the upcoming semester. These initiatives reflect the department's continued commitment to academic enrichment, interdisciplinary learning, and skill development.

In addition, this issue showcases the recent research publications of our faculty members and guest lectures delivered by them. It also highlights the notable achievements of our faculty members and Ph.D. scholars, including the receipt of international travel grant, Postdoctoral position, and selection in LOUYS Programme 2026 in recognition of their academic and research excellence. Further, the newsletter features updates on recent developments, emerging trends, and advancements in mathematics and computing.

Together, we are working to make meaningful contributions across mathematics, computing, and beyond.

I would like to express my heartfelt gratitude to the editorial team for their dedication in producing this newsletter, and I thank all contributors for their insightful and valuable contributions.

Prof. S. P. Tiwari, *Head of the Department*



Department Events

The sixth *Indian National Groundwater Conference (INGWC-2026)* was organized jointly by the Department of Mathematics and Computing, Civil Engineering, and Environmental Science and Engineering, in association with the Association of Global Groundwater Scientists (AGGS), at the Indian Institute of Technology (Indian School of Mines) Dhanbad, from 25-26 September 2026. The event was sponsored by CSIR and DHI. The theme of the conference was “Groundwater Utilization – Issues & Challenges under Climate Change Scenarios,” with experts calling for scientific, interdisciplinary, and community-based approaches to groundwater management under changing climate conditions. Altogether, 16 lead speakers from different IITs, including IIT Bombay, IIT Madras, IIT Delhi, IIT Roorkee, IIT Hyderabad, IIT (ISM) Dhanbad, NIH Roorkee, NGRI, CUSB, and other Centrally funded institutions, delivered expert lectures on various groundwater issues and challenges under climate change conditions. More than 100 participants attended the INGWC-2026 and presented research papers, out of which a few exceptional presentations received Best Paper Awards, and two young researchers were awarded AGGS Young Fellow awards.



Department Events

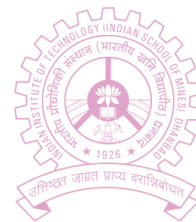
During the conference, a few distinguished persons were awarded AGGS honors. Prof. Mritunjay Kumar Singh, IIT (ISM) Dhanbad, and Prof. Ashok K Kesari, IIT Delhi, received the *Distinguished Fellow Award*; Dr. Shivendra Nath Rai, Retired Chief Scientist, CSIR-NGRI, Hyderabad, and Prof. T.I. Eldho, IIT Bombay, received the *Lifetime Achievement Award*; while Prof. Indumathi M. Nambi, IIT Madras, Prof. R. Selvakumar, PSGIAS, Coimbatore, Prof. Bellie Sivakumar, IIT Bombay and Prof. D. Suresh Kumar, Director, CARDS, TNAU, Coimbatore were honoured with the *Fellow AGGS Award*.



Research & Publications



- **A. Kalita.** Autonomous Energy-Aware Cell Scheduling for 6TiSCH-Based Industrial IoT, IEEE Internet of Things Journal, 13, 45040-45049, 2026.
- **S. Jin, B. V. Pandey, and A. Singh.** Certain infinite products in terms of MacMahon type series, International Journal of Number Theory, 22, 547–567, 2026
- **G. K. Verma and A. K. Singh.** On function-correcting codes in the Lee metric, Journal of Algebra, 712, 776-803, 2026.
- **A. Singh and A. K. Singh,** Function-Correcting Codes for Insertion-Deletion Channels, IEEE Transactions on Information Theory, 2026.
- **S. Bhoi, A. K. Singh, and Kishan.** Construction of Primers for DNA-Based Storage Systems, IEEE Transactions on NanoBioscience, 2026.
- **A. Jayswal, P. Samal, J.-C.Yao.** Finite convergence and weak sharp solutions for bilevel controlled variational inequality problems, Positivity, 30, 2026.
- **P. Panja, R. B. Kaligatla, and B. N. Mandal.** Surface wave scattering by a rectangular structure with two unequal thin plates, European Journal of Mechanics-B/Fluids, 204624, 2026.
- **S. Bansal and P. K. Kewat.** Construction of DNA Codes with R-Constraint, RC-Constraint and Fixed GC Content, 14th International Workshop on Coding and Cryptography (WCC) 2026.
- **S. Bansal and P. K. Kewat.** On the Construction of Reversible Linear Codes over the Field $\mathbb{F}_{2^r}$, 2026 IEEE International Symposium on Information Theory (ISIT) 2026.



Research & Publications

- M. K. Bose, A. K. Singh, and U Parampalli. On a class of ternary LCD BCH codes. SETA 2026.
 - Suman, B. Bera, S. Kumawat, M. Verma, H. Nagahara. MatSense: A Multimodal Dataset and Benchmark for Material Classification. Asian Conference on Computer Vision (ACCV) 2026.
 - T. Ojha, M. M. Hussain, S. Bera, N. Ahmed, S. Misra (eds.), Edge-enabled 6G Networking - Foundations, Technologies, and Applications, Springer Nature, 2026. [ISBN: 978-3032190413]
 - A. K. Singh, S. Das, S. Sharma, A unified analysis of Love and Bleustein–Gulyaev waves in piezo-viscoelastic layered structures with graded buffer layer and imperfect interfaces, The European Physical Journal Plus, 141, 8, 998, 2026.
-

— ACHIEVEMENTS

Faculty Achievements

- Prof. A. K. Singh was appointed as a *Member of the Academic Council* of JNU, New Delhi for 2 years.
 - Prof. A. K. Singh was appointed as a *Member of the Advisory/Expert Committee* on Physical Sciences, UP CST for 3 years.
 - Prof. M. K. Singh received the *Distinguished Fellow Award* from the Association of Global Groundwater Scientists (AGGS) at the 6th Indian National Groundwater Conference.
-

NPTEL

This Semester



RUNNING NOW

JUL - OCT 2026

- *“Essentials of Topology”* by Prof. S. P. Tiwari
- *“Design and Analysis of Algorithms with Applications”* by Prof. Srinivasa Rao Pentyala
- *“Introduction to Software Engineering A Road Map to Reliable Software Development and Maintenance”* by Prof. Subhashis Chatterjee

COMING UP

JAN - APR 2027

- *“Algebra and its Applications”* by Prof. Abhay Kumar Singh
- *“GPU Computing”* by Prof. Badam Singh Kushvah
- *“Introduction to Mathematical Ecology : Models, Methods, Bifurcation and Chaos”* by Prof. Ranjit Kumar Upadhyay
- *“Numerical Analysis and Computational Applications”* by Prof. Srinivasa Rao Pentyala
- *“Modern machine Learning: From Regression to Transformers”* by Prof. Subhashis Chatterjee

Interested Students can visit

nptel.ac.in

swayam.gov.in



Ministry of Education
Government of India





Student Achievements

- Ph.D students **Mr. Biswajit Bera**, supervised by **Prof. S. Kumawat**, and **Mr. Dhiraj Kumar Srivastav**, supervised by **Prof. R. K. Upadhyay**, were selected under the **LOTUS Programme 2026**, led by the Japan Science and Technology Agency to promote research collaboration between India and Japan. Biswajit will carry out his research in collaboration with *Prof. Hajime Nagahara* of the *University of Osaka*, Japan; and Dhiraj will work with *Prof. Ton Viet Ta* of *Kyushu University*, Japan.



Mr. Biswajit Bera



*Mr. Dhiraj Kumar
Srivastav*

- Ms. Sujata Bansal**, a PhD scholar under the supervision of **Prof. P. K. Kewat**, received *ANRF International Travel Support* to attend and present her research work at the 2026 IEEE International Symposium on Information Theory (ISIT 2026) held in Guangzhou, China. She presented the paper titled “On the Construction of Reversible Linear Codes over the Field F_{2^r} ” at the conference on 03 July 2026.



Ms. Sujata Bansal

- Ms. Varsha Tiwari**, who received her PhD under the supervision of **Prof. P. K. Kewat**, has been offered a postdoctoral position at the University of Arizona, USA



Invited Talks

- **Prof. S. Laxmi** delivered an expert lecture on "Gradient-Based Optimization for Physics-Driven Neural Systems" at a Faculty Development Programme on "Advanced Wireless Communications: Concepts, Challenges and Optimization Strategies" organized by MNNIT Allahabad. [7 August 2026].
- **Prof. T. Ojha** presented an expert lecture on "Cognitive Edge Intelligence for NTN" at "Emerging AI Technologies for Next-Generation Space-Terrestrial Networks" organized by EICT, IIT Roorkee and NIT Delhi. [23 September 2026].
- **Prof. S. A. Sahu** delivered an invited talk on "Wave Dynamics through Differential Equations: An Interdisciplinary Perspective" on 28.09.2026 in Refresher Course on "Applications of Mathematics", organized by the UGC-Malaviya Mission Teacher Training Centre, Pt. Ravishankar Shukla University, Raipur.
- **Prof. S. A. Sahu** delivered a keynote lecture on the topic "Theoretical Seismology: An interdisciplinary research area" in a two-day workshop on "Interdisciplinary approaches to structural dynamics, seismology and sustainable engineering" organized by Ramaiah University of Applied Sciences, Bangalore on 30.09.2026.

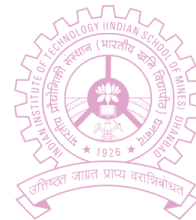




Mathematics & Computing News

- ACM TechBrief: Artificial Intelligence's Effects on Open Source** **TechBrief**
 Artificial intelligence is transforming open-source software development, bringing both significant opportunities and new risks. A recent ACM TechBrief highlights how AI can accelerate coding, identify vulnerabilities, and generate patches, while simultaneously enabling attackers and increasing the volume of low-quality or potentially malicious contributions that maintainers must review. The report warns that these pressures compound long-standing challenges in cybersecurity, project maintenance, funding, and sustainability. It recommends wider adoption of Software Bill of Materials (SBOMs), stronger governance of open-source dependencies, greater investment in non-coding project activities, and sustainable financial support for critical open-source projects.
More info: <https://dl.acm.org/doi/book/10.1145/3838809>
 - MIT's tiny flying robot gets 450% faster with AI:** A new AI control system allows MIT's tiny flying robot to move with insect-like agility, increasing its speed by about 450 percent and enabling it to perform 10 somersaults in 11 seconds. The technology could eventually help miniature robots search earthquake rubble, inspect confined spaces, and navigate dangerous environments that conventional drones cannot reach. This work highlights the growing potential of AI-powered micro-robotics for disaster response and exploration.
More info: <https://www.sciencedaily.com/releases/2026/09/260921081114.htm>
 - Quantum teleportation breakthrough:** Scientists crack a 25-year entanglement challenge: Scientists have developed and experimentally demonstrated a long-sought method for identifying W states, an important form of multi-photon quantum entanglement. The technique could make complex entangled systems much easier to measure, opening new possibilities for quantum teleportation, communication, and computing. The breakthrough could also improve the reliability of future quantum networks by enabling more precise characterization of entangled states.
More info: <https://www.sciencedaily.com/releases/2026/09/260929053550.htm>
-

Faculty Profiles



Prof. A Antony Selvan

ASST. PROFESSOR

Computational Harmonic Analysis



Prof. Abhay Kumar Singh

Professor

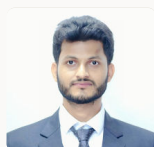
Coding Theory, Post Quantum Cryptography,
Quantum Computing



Prof. Abhishek Kumar Singh

Professor

Differential Equations, Integral Equations, Solid
Mechanics, Elastodynamics, Wave Propagation
and Vibration Aspects, Theoretical Seismology



Prof. Ajit Singh

ASST. PROFESSOR

Number Theory and Combinatorics, Partition
Theory, q-series and Modular Forms



Prof. Akhilesh Prasad

Professor (HAG)

Integral Transforms, Pseudo-Differential
Operators, and Wavelet Analysis



Prof. Alakesh Kalita

ASST. PROFESSOR

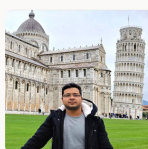
Internet of Things (IoT), AI/ML For Computer
Systems, Edge/Cloud Computing



Prof. Anurag Jayswal

Professor

Mathematical Programming, Generalized
Convexity, Vector Optimization, Variational
Inequality, Optimal Control



Prof. Ashok Das

ASST. PROFESSOR

Modeling, simulation, and analysis of particulate
processes



Prof. Atul Kumar Verma

ASST. PROFESSOR

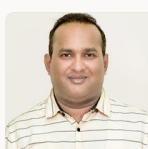
Mathematical Modelling & Simulation, Statistical
Mechanics



Prof. Badam Singh Kushvah

PROFESSOR

Astrodynamics, Guidance and Control Systems,
Space Trajectory Design, GPU Computing/HPC



Prof. Dinabandhu Pradhan

Professor

Graph Theory And Graph Algorithms

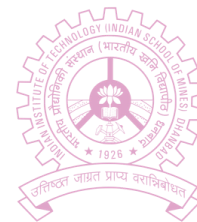


Prof. Gajendra K. Vishwakarma

Assoc. Professor

Survey Sampling Theory and Techniques,
Regression Models and Machine Learning, Data
Imputation Models, Bayesian Statistics, Joint
Modeling and Longitudinal Data Analysis

Faculty Profiles



Prof. Garib Nath Singh

Professor (HAG)

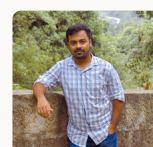
Sample Surveys, Missing Data Analysis, Data Analysis



Prof. Hemant Kumar Mishra

ASST. PROFESSOR

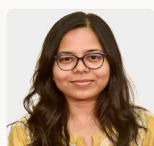
Matrix Analysis, Quantum Information Theory, Linear Algebra, Functional Analysis



Prof. Himadri Halder

ASST. PROFESSOR

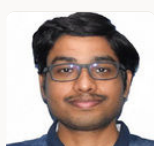
Complex Analysis, Functional Analysis



Prof. Jyoti Dasgupta

ASST. PROFESSOR

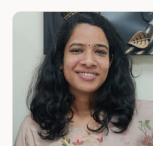
Algebraic Geometry



Prof. Kartikay Gupta

ASST. PROFESSOR

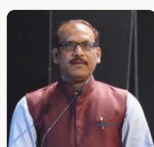
Data Science And Machine Learning



Prof. Manisha Verma

ASST. PROFESSOR

Computer Vision, Deep Learning, AI in Healthcare



Prof. Mritunjay Kumar Singh

Professor (HAG)

Solute Transport Modelling, Groundwater Contamination Problems, Mathematical Modelling & Computation



Prof. Manpreet Singh

ASST. PROFESSOR

Low-dimensional Topology, Combinatorial group theory



Prof. Neeru Bala

ASST. PROFESSOR

Operator theory



Prof. Pramod Kumar Kewat

Assoc. Professor

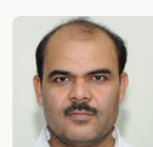
Algebraic Coding Theory and Number Theory



Prof. Ramanababu Kaligatla

Assoc. Professor

Differential and Integral Equations, Wave-Structure Interactions



Prof. Ranjit Kumar Upadhyay

Professor (HAG)

Nonlinear Differential Equations, Chaos Modeling, Mathematical Neuroscience, Nonlinear dynamics, Disease dynamics, Population dynamics, Virus dynamics, Brain dynamics and Neural modeling

Faculty Profiles



Prof. S. P. Tiwari

PROFESSOR

Topology, Category Theory, and Fuzzy Automata Theory



Prof. Sanjeev Anand Sahu

Assoc. Professor

Electro-elastodynamics & Magneto-elastodynamics, Solid Mechanics, Early Earthquake Warning System



Prof. Santimoy Kundu

Assoc. Professor

Theoretical Seismology And Wave Propagation Aspects



Prof. Scindhiya Laxmi

ASST. PROFESSOR

Physics Informed Machine Learning, Support Vector Machines, Scientific Artificial Intelligence



Prof. Shuvashree Mondal

ASST. PROFESSOR

Statistical inference, Robust estimation, Reliability Analysis, Distribution Theory



Prof. Snehajit Misra

ASST. PROFESSOR

Vector bundle theory, algebraic geometry, Seshadri constants, moduli problems of vector bundles and Higgs bundles on projective varieties



Prof. Srinivasa Rao Pentyla

Assoc. Professor

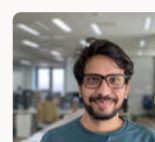
Numerical Methods for PDEs, CFD, AI/ML Procedures for Solution of Real Life Models



Prof. Subhashis Chatterjee

Professor (HAG)

Software Engineering, Algorithms, Bioinformatics



Prof. Sudhakar Kumawat

ASST. PROFESSOR

Computer Vision, Deep Learning



Prof. Tamoghna Ojha

ASST. PROFESSOR

AI/ML For IoT, Edge Computing, Digital Twin, 5G/6G, Future Networks

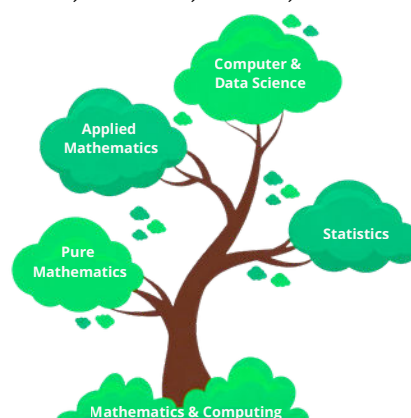


About the Department

The Department of Mathematics and Computing at IIT(ISM) Dhanbad has its roots in the establishment and evolution of the institute itself. Over the decades, the institution has expanded its academic offerings, and our Department is one of the key departments that emerged as part of the institute's broader academic growth.

Presently, the department is home to 34 faculty members, engaged in a wide array of research fields including Applied Mathematics, Pure Mathematics, Statistics, and Computer & Data Science. Our research efforts are supported and recognized by prominent national funding agencies such as CSIR, NBHM, DRDO, ISRO, and DST.

The department offers the programs such as B.Tech (Mathematics & Computing), Integrated M.Tech (Mathematics & Computing), M. Sc (Mathematics & Computing) and M. Tech (Data Analytics). In addition, the department also offers a Ph.D. program in Mathematics and Statistics. Currently, over 100 Ph.D. students are engaged in research at the department.



Editorial Team

ST

Prof. S P Tiwari

TO

Prof. Tamoghna Ojha

AV

Prof. Atul Kumar Verma

KH

Kumar Harsh

Contact : gananam@iitism.ac.in

Published By

Department of Mathematics and Computing

IIT (ISM) Dhanbad - 826004

<https://www.iitism.ac.in/mathematics-and-computing>



/mnc-iitism



/mnc-iitism



/MnC_IITDhanbad