



भारतीय प्रौद्योगिकी संस्थान कानपुर
Indian Institute of Technology Kanpur

MATHEMATICS AND STATISTICS

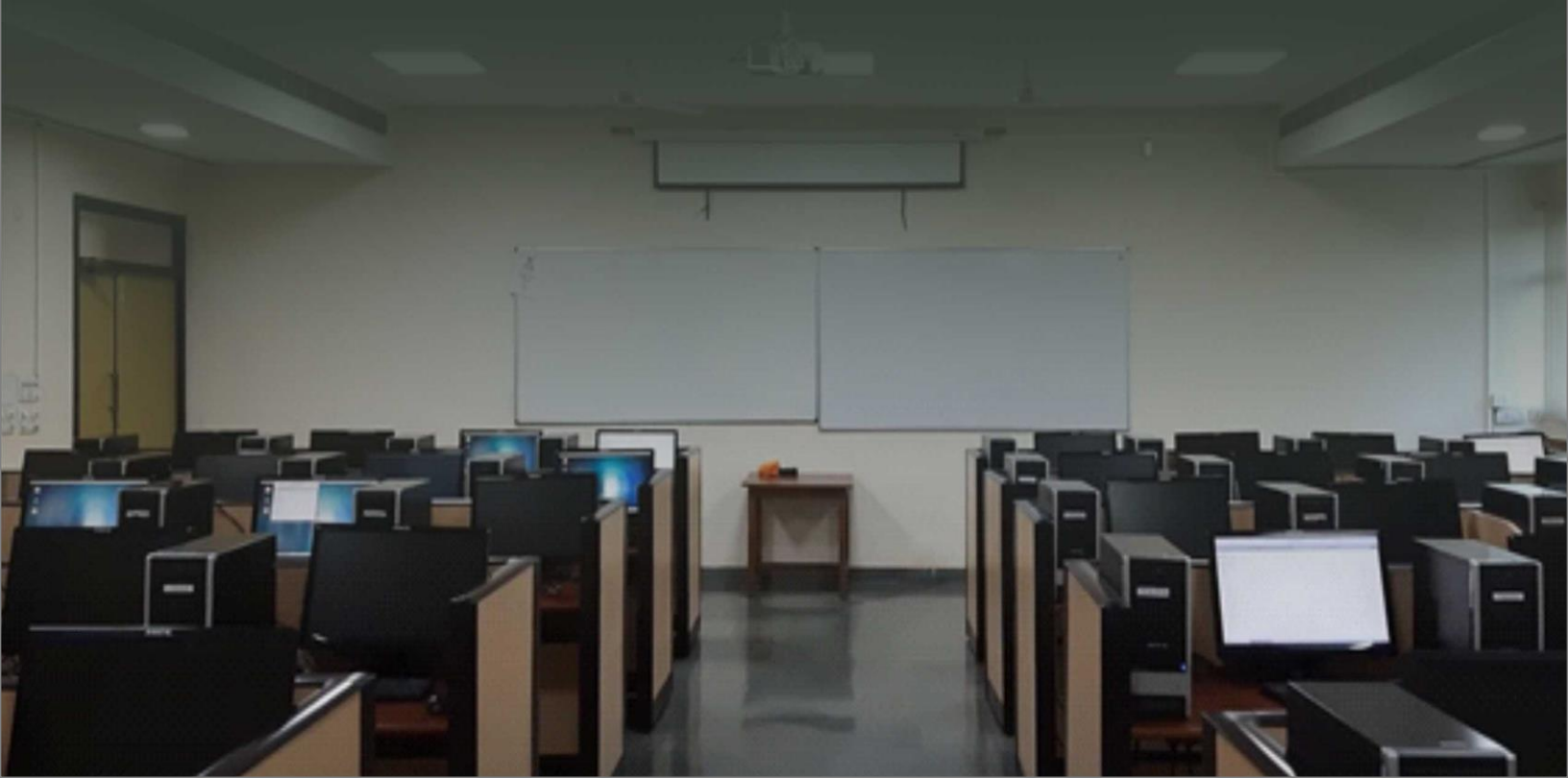
POST GRADUATE PROGRAM

Website: www.iitk.ac.in/math



MATHEMATICS AND STATISTICS

The Department offers PhD programs in Mathematics and Statistics with the objective of preparing motivated researchers who can work in frontline areas as well as to prepare well-trained teaching faculty. The vibrant academic environment of the department is nurtured by strongly motivated faculty. The department faculty takes research initiatives to work in recent and emerging areas, and encourages interdisciplinary trends. Around 290 research scholars have graduated from the department and are serving in the faculty of various institutes and universities in India and abroad. Some of them are in industry as well.



POST-GRADUATE PROGRAMMES OFFERED

- ❖ PhD in Mathematics
- ❖ PhD in Statistics



Lab Facilities

In addition to the Computer Centre (CC) of the institute which caters to specialized computational needs of the academic community, the department has its own computing facilities for faculty, staff and students of the department as follows:

- A Linux lab having 48 high end desktops with remote access facility;
- A Windows lab having 34 high end desktops with remote access facility;
- Advanced GPU and non-GPU workstations;
- HPC clusters installed in centralized data centers: 2 master nodes, 20 nodes;
- Separate UPS for network racks and switches;
- Lab desktops connected with centralized UPS having a good backup

Our students can access various licensed software available from the CC
(list of applications: <https://www.iitk.ac.in/cc/software>s)

Computer Labs

- One Linux lab is well equipped with 48 desktop computers;
- One Windows lab is well equipped with 34 desktop computers;
- 3 rooms for postdoc fellows with personal cabin;
- 5 research scholar rooms, each scholar gets a personal computer and a cubicle;
- All PCs have advanced configurations (Core i7/Core i5) with latest software;
- Labs are maintained by CC engineers and supporting staff.

Infrastructure for Seminars

- Three seminar rooms equipped with projectors, screen and multimedia;
- For interviews/seminars, we have Zoom/Skype video conferencing facilities

Printing Facility

- Our department has 3 high-end photocopier machines with scanning and printing facilities for department academic courses.
- We also provide printing and scanning facility to our PhD students for their research. For UG and PG students, this is on a request basis.



FACULTY LIST

- ❖ ANAND A. (PhD, University of Minnesota), Research Interests: Computational methods for the solution of partial differential and integral equations, with emphasis on high-order efficient simulators.
- ❖ BAHUGUNA, D. (PhD, IIT Kanpur), Research Interests: Differential Equations, Non-linear Analysis, Theory of Semigroups.
- ❖ BAKSHI, KESHAB CHANDRA (PhD, IMSc, Chennai), Research Interests: C^* -algebras and von Neumann algebras. In particular, Subfactor theory and Planar algebras.
- ❖ BAL, KAUSHIK (PhD, UPPA, France), Research Interests: Elliptic and Parabolic Partial Differential Equations.
- ❖ BANERJEE, MALAY (PhD, University of Calcutta), Research Interests: Mathematical Ecology and Eco-epidemiology, Nonlinear Dynamics.
- ❖ BANERJEE, MOHUA (PhD, University of Calcutta), Research Interests: Rough Set Theory and its Applications, Modal Logics.
- ❖ BHAR, SUPRIO (PhD, Indian Statistical Institute, Bangalore), Research Interests: Stochastic Partial Differential Equations in infinite dimensional spaces, Hilbert valued Stochastic Processes, Rough paths and Regularity Structures.
- ❖ BISWAS, MRINMAY (PhD, IISER Kolkata), Research Interests: PDE, Stochastic PDE, Control Theory and Numerics.
- ❖ BONALA, NARASIMHA CHARY (PhD, CMI, Chennai), Research Interests: Algebraic Groups, Algebraic geometry and Representation Theory
- ❖ CHANDEL, VIKRAMJEET SINGH (PhD, IISc, Bengaluru), Research Interests: Several Complex Variables.
- ❖ CHAVAN, SAMEER (PhD, University of Pune), Research Interests: Operator Theory.
- ❖ CHOWDHURY, INDRANIL (PhD, TIFR - CAM, Bengaluru), Research Interests: Theory and Numerical Analysis of PDEs, Nonlocal/ Fractional order Problems, Fully Nonlinear Equations.
- ❖ DAR, APARNA (PhD, S.U.N.Y Stony Brook, USA), Research Interests: Differential Geometry, Algebraic Topology, Knot Theory.
- ❖ DHAR, SUBHRA SANKAR (PhD, ISI, Calcutta), Research Interests: Non-parametric and robust statistical methods, Cluster analysis and likelihood based inference.
- ❖ DUTTA, SUBHAJIT (PhD, ISI, Kolkata), Research Interests: Discriminant Analysis, Inference based on Data Depth, Characterization of Multivariate Distributions, Classification of Sequence Data.
- ❖ GANGULY, ARIJIT (PhD, TIFR Mumbai), Research Interests: Diophantine approximation, Dynamical systems and Random walks.

FACULTY LIST

- ❖ GHORAI, S. (PhD, Leeds, UK), Research Interests: Computational Fluid Dynamics, Mathematical Biology, Adaptive Unstructured grid.
- ❖ GUIN, SATYAJIT (PhD, IMSc, Chennai), Research Interests: Noncommutative Geometry, Operator Algebra.
- ❖ HAZRA, ARNAB (PhD, North Carolina State University, Raleigh, US), Research Interests, Spatial Statistics, Bayesian modeling, Extreme value analysis, Environmental Statistics.
- ❖ JHA, SOMNATH (PhD, Tata Institute of Fundamental Research, Mumbai), Research Interests: Number Theory, Arithmetic Geometry.
- ❖ KUBER, AMIT (PhD, University of Manchester, UK), Research Interests: Representation theory of associative algebras, linear orders and combinatorics of words, model theory.
- ❖ KUNDU, DEBASIS (PhD, Pennsylvania State University), Research Interests: Survival Analysis, Non-Linear Regression, Statistical Computing, Statistical Signal Processing
- ❖ Kumar, Ashutosh (PhD: University of Wisconsin Madison), Research Interests: Mathematical Logic, Set Theory and its applications to Analysis, Measure Theory and Topology.
- ❖ MALOO, ALOK KUMAR (PhD, TIFR, Mumbai), Research Interests: Commutative Algebra.
- ❖ MANDAL, ASHIS (PhD, ISI, Kolkata), Research Interests: Algebraic Topology; Deformation of Algebraic Structures, Higher Structures and Related Fields.
- ❖ MISRA, NEERAJ (PhD, IIT Kanpur), Research Interests: Statistical Inference, Reliability Theory, Ranking and Selection problems.
- ❖ MITRA, AMIT (PhD, IIT Kanpur), Research Interests: Statistical Signal Processing, Data mining in Finance and Econometrics.
- ❖ MITRA, SHARMISTHA (PhD, IIT Kanpur), Research Interests: Order statistics and its applications, Order estimation of nested non-linear models, Econometrics.
- ❖ Mukhopadhyay, Minerva (PhD, Indian Statistical Institute, Kolkata), Research Interests: Asymptotic Statistics, Bayesian Variable Selection, Nonparametric Inference.
- ❖ MOHANTY, PARASAR (PhD, IIT Kanpur), Research Interests: Harmonic Analysis
- ❖ MUTHUKUMAR, P. (PhD, Indian Statistical Institute, Chennai), Research Interests: Complex Analysis and Operator Theory

FACULTY LIST

- ❖ MUTHUKUMAR, T. (PhD, Institute of Mathematical Sciences), Research Interests: Homogenization and Variational Methods for PDE's, Elliptic PDE's, Optimal controls.
- ❖ NADIMPALLI, SANTOSH, Research Interests: Representation theory.
- ❖ NILAKANTAN, NANDINI (PhD, IISc, Bangalore), Research Interests: Combinatorial Topology, Computational Geometry.
- ❖ PAL, ABHIJIT (PhD, Indian, Statistical Institute, Kolkata), Research Interests: Geometric Group Theory, Relatively Hyperbolic Groups, Mapping Class Groups.
- ❖ PATNAIK, S. (PhD, University of Cincinnati, USA), Research Interests: Operator Theory
- ❖ PATTANAYAK, S. K. (PhD, CMI, Chennai), Research Interests: Algebraic Groups and Invariant Theory, Lie Algebras and Representation Theory.
- ❖ RATHISH KUMAR, B.V. (PhD, SSSIHL, prasanthi nilayam), Research Interests: Parallel Computing, Numerical Methods For PDEs, Computational Fluid Dynamics, Finite Element Analysis, Computational Biomechanics, Porous Media, Image Processing
- ❖ MITRA, SHARMISTHA (PhD, IIT Kanpur), Research Interests: Order statistics and its applications, Order estimation of nested non-linear models, Econometrics
- ❖ RAWAT, RAMA (PhD, ISI, Bangalore), Research Interests: Harmonic analysis on Lie groups.
- ❖ ROY, PROSENJIT (PhD, University of Zurich, Switzerland), Research Interests: Partial Differential Equations.
- ❖ SADHUKHAN, SOUMYARUP (PhD, Indian Statistical Institute, Kolkata), Research Interests: Game Theory, Mechanism Design and Social Choice Thoery.
- ❖ SAMUEL, PREENA (PhD, IMSc, Chennai), Research Interests: Structure theory and representations of algebraic groups.
- ❖ SANKI, BIDYUT (PhD, Indian Institute of Science, Bangalore), Research Interests: Topology and Geometry.
- ❖ SEN DEBASIS (PhD, ISI, Kolkata)), Research Interests: Homotopy theory, Group actions.
- ❖ SHALABH (PhD, University of Lucknow), Research Interests: Econometrics, Regression Analysis, Linear Models, Measurement Error Models, Sampling Theory.
- ❖ SHARMA, SACHIN (PhD, IMSc, Chennai), Research Interests: Representation theory of Kac-Moody algebra, extended affine Lie algebra.

FACULTY LIST

- ❖ SHUNMUGARAJ, P. (PhD, IIT Bombay), Research Interests: Functional Analysis.
- ❖ SHEKHAR, SUDHANSHU (PhD, TIFR, Mumbai), Research Interests: Algebraic Number Theory and Arithmetic Geometry.
- ❖ SINGH, SAURABH KUMAR (PhD, TIFR, Mumbai), Research Interests: L-Function, Sub-convexity problems, Sieve Method, Riemann Zeta Function.
- ❖ SINGH, SATYA PRAKASH (PHD, IIT BOMBAY), Research Interests: Optimal design of experiments related to cross-over trials, cluster randomized trails, longitudinal studies, and the ordered experiments.
- ❖ Singla, Pooja (PhD, IMSc, Chennai), Research Interests: Representations theory of finite and p-adic groups, Applications of representation theory.
- ❖ THAKUR, AJAY SINGH (PhD, IMSc, Chennai), Research Interests: Algebraic Topology, Complex Manifolds.
- ❖ VATS, DOOTIKA (PHD, UNIVERSITY OF MINNESOTA), Research Interests: Markov chain Monte Carlo, Monte Carlo, Bayesian computation, Bayesian statistics



BROAD RESEARCH AREAS

- ❖ Algebraic geometry
- ❖ Commutative Algebra
- ❖ Complex Analysis & Operator Theory
- ❖ Computational Acoustics and Electromagnetics
- ❖ Computational Fluid Dynamics
- ❖ Differential Equations
- ❖ Functional Analysis & Operator Theory
- ❖ Harmonic Analysis
- ❖ Homological Algebra
- ❖ Image Processing
- ❖ Mathematical Biology
- ❖ Number Theory & Arithmetic Geometry
- ❖ Numerical Analysis and Scientific Computing
- ❖ Operator Algebra
- ❖ Representation Theory
- ❖ Set Theory and Logic
- ❖ Several Complex Variables
- ❖ Topology and Geometry
- ❖ Tribology
- ❖ Bayesian Nonparametric Methods
- ❖ Data Mining in Finance
- ❖ Econometric Modelling
- ❖ Entropy Estimation and Applications
- ❖ Environmental Statistics
- ❖ Estimation in Restricted Parameter Space
- ❖ Game Theory
- ❖ Machine Learning and Statistical Pattern Recognition
- ❖ Markov chain Monte Carlo
- ❖ Non-Parametric and Robust Statistical methods
- ❖ Optimal Experimental Design
- ❖ Ranking and Selection Problems
- ❖ Regression Modelling
- ❖ Robust Estimation in Nonlinear Models
- ❖ Rough Paths and Regularity structures
- ❖ Spatial statistics
- ❖ Statistical Signal Processing
- ❖ Step-Stress Modelling
- ❖ Stochastic Partial Differential Equations
- ❖ Theory of Stochastic Orders and Aging and Applications



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