Faculty and their Specializations

- ***A. K. Lal :*** Algebraic graph theory.
- ***A. Dar :*** Differential geometry, Algebraic topology, Knot theory.
- ***A. K. Maloo :*** Commutative algebra.
- ***A. Mitra :*** Statistical signal processing, Data mining of financial and economic time Series
- ***A. K. Ghosh :*** Pattern Recognition, Robust and Non Parametric Statistics, Statistical Computing
- ***D. Bahuguna :*** Differential equations, Non-linear analysis, Theory ofsemigroups.
- ***D. Kundu :*** Survival analysis, Non-linear regression, Statistical computing, Statistical signal processing.
- ***G. P. Kapoor :*** Complex analytic dynamics and fractals, Computational complex analysis, Bifurcation and Chaos.
- ***G. Santhanam :*** Differential geometry and analysis
- ***I.D. Dhariyal :*** Estimation, Ranking and selection procedure
- ***J. Dutta :*** Optimization theory
- ***M. Gupta :*** Functional analysis, Operator theory
- ***M. K. Kadalbajoo :*** Numerical analysis
- ***Malay Banerjee :*** Dynamical system, Biomathematics
- ***Mohua Banerjee :*** Modal logic, Rough set theory and its applications, Belief revision
- ***N. Misra :*** Statistical inference, Applied probability
- ***N. Nilakantan :*** Combinatorial topology, Algebraic topology, Computational
- ***P. Dutt :*** Numerical analysis, Fluid mechanics, Parallel computing
- ***P. Sharma (AICTE Fellow):*** Mathematical Programming, Combinatorial Optimisation
- ***Parasar Mohanty:*** Harmonic Analysis
- ***Peeyush Chandra :*** Mathematical modelling, Fluid mechanics, Lubrication, Biomechanics, Mathematical epidemiology
- ***P. Shunmugaraj :*** Functional analysis
- ***P. Sinha :*** Computational fluid dynamics, Lubrication theory, Biomechanics, Environmental pollution
- ***R. Rawat :*** Harmonic analysis
- ***R. K. S. Rathore :*** Approximation theory, Numerical analysis, Cumputer aided tomography
- ***S. Ghorai :*** Computational fluid dynamics, Mathematical biology, Air pollution modelling.
- ***Shobha Madan :*** Harmonic analysis on Euclidean spaces.
- ***Shalabh :*** Econometrics, Measurement error models, Missing data. models, Forecasting, Sampling theory, Regression analysis.
- ***S. Mitra :*** Moments of order statistics, Econometric modelling.
- ***S. K. Ray :*** Harmonic analysis on Lie groups.
- ***S. R. Patel :*** Functional analysis, Abstract harmonic analysis.
- ***Sudipta Dutta :*** Functional Analysis
- ***U. B. Tewari :*** Harmonic analysis, Functional analysis
- ***V. Raghavendra :*** Non-Linear analysis, Partial differential and integral equations.

Contact

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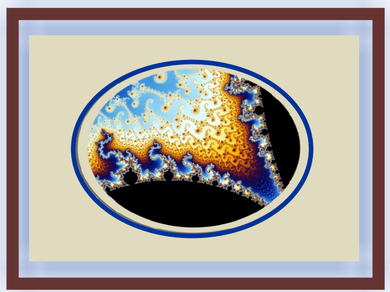
Indian Institute of IITK Technology Kanpur

Mathematics & Statistics

The department, which started as the Department of Mathematics in 1960, got its new name as the Department of Mathematics and Statistics in 2004. It has always shared the vision of the Institute in striving for excellence in research and teaching activities and has succeeded in this endeavor to a large extent. Over the years, the department has evolved as one of the premier departments in the country providing excellent teaching and research in Mathematical and Statistical sciences. The vibrant academic environment is nurtured by strongly motivated faculty and provides an opportunity to pursue research in front line areas of basic sciences as well as in interdisciplinary areas of science and technology. In the coming decade, apart from the existing areas, the department intends to develop areas related to mathematical aspects of computing science in all its manifestations.

The contributions by the faculty of the department in research and teaching have won recognition by the scientific community in the form of various prestigious national awards and distinctions. There is a continuous flow of visitors, from reputed institutions in India and abroad, who collaborate with the faculty of the department in various areas of mutual interest. A number of sponsored research projects funded by national agencies are undertaken by the faculty.

The department has produced over 275 Ph.D. students who are now associated with reputed educational institutions and R&D organizations across the globe. Currently, there are about 34 faculty members and 70 research scholars in the department working on state of art research areas.



The broad areas of research specializations available in the department are:

- Algebra, Analysis (Complex, Functional, Harmonic), Combinatorics, Geometry,
- Mathematical Logic, Differential equations, Dynamical systems & Fractals,
- Optimization, Mathematical Biology, Tribology, Computational Fluid Dynamics,
- Numerical Analysis, Image processing, Parallel Computing,
- Multivariate Analysis, Order Statistics, Reliability, Statistical Inference,
- Statistical signal processing, Regression Analysis, Applied probability.

ACADEMIC PROGRAMMES:

The department has two parallel Ph.D. programmes, in Mathematics and in Statistics. Admission to these programmes is through qualification in GATE/NET followed by a departmental interview/test. There is a sizeable number of graduate students, and regular seminars keep everyone charged and updated. The scope of research is open to collaboration across the Institute, in interdisciplinary fields. The doctoral programmes aim to prepare motivated researchers in frontline areas. There is an excellent record of post-graduate placement - both in academics and in industry.

At the Master's level the department offers a five year M. Sc. (Integrated) programme in Mathematics and Scientific Computing. The admission to this programme is through the All India Joint Entrance Examination (JEE) which is common to all IITs. The key features of this programme is the emphasis on problem solving and application of theoretical knowledge to real world problems. The aim of this programme is to nurture young talents in all aspects of mathematical sciences and scientific computing and to train computational scientists who can work on real life porblems.

The department also has M. Sc. (2year) programmes in Mathematics and in Statistics. The admission to the 2-yr M. Sc. Programmes is through the All India Joint Admission to M. Sc. (JAM) examination after a B. Sc. or an equivalent degree. The aim of these porgrammes is to cultivate mathematical aptitude, nurture mathematical interests and to motivate for research in mathematical and statistical sciences.

The programmes are flexible enough to allow students to pursue their own interests, even outside the purview of the department. The graduating students interested in pursuing higher studies, find admission in top academic institutes in India and abroad. Others join finance, analytics or IT industry. The placement record of the graduating students from these programmes is very good every year."

IN A NUTSHELL :

Ph.D. programme in Mathematics
Ph.D. programme in Statistics
Admission through GATE/NET, followed by interview/test

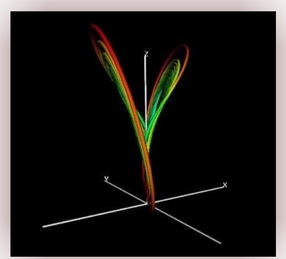
Five year (Integrated) programme in Mathematics and Scientific Computing
Admission through JEE

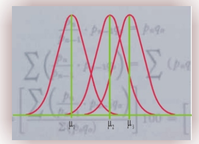
Two year M.Sc. programme in Mathematics
Two year M.Sc. programme in Statistics
Admission through JAM

FACILITIES:

The Computer Centre of the institute provides E-mail, Web, DNS, FTP, Internet access, high performance computing and other services 24 hours and 365 days a year. Computer Centre has a number of state of the art servers, high end Linux and Windows labs and application software. The state of the art parallel and multi-processor computer servers cater to the computational needs of the academic community. In addition, the department also has a PC lab with high end Linux and Windows desktops that provide computing and remote access facilities exclusively to the department students.

IIT Kanpur has a large Central library, named after late P. K. Kelkar, the founding director of the institute. There is a generous allocation from the Institute towards Library funding for Mathematics and Statistics. In addition, the Central library has the special status of being an NBHM regional Library, thereby looking after the needs of mathematicians in the geographic region. Towards this, NBHM has been providing us with a sizeable annual grant. The department has also built a small library run by the students. The collection in this library has come from retired faculty members, gifts from visitors, and complimentary copies of books from publishers.





Books:

The faculty of the Department of Mathematics and Statistics has been very active in the publication of good quality text books and monographs, both in pure as well as applied mathematics and statistics. Some of the publications include :

- ***P K Kamthan and Manjul Gupta,*** *Sequence Spaces and Series, Marcel Dekker Inc, New York, 1981.*
- ***P K Kamthan and Manjul Gupta,*** *Theory of Bases and Cones, Pitman, London, 1985.*
- ***O P Juneja and G P Kapoor,*** *Analytic Functions - Growth Aspects,* Pitman Publishing Co., London,1986.
- ***P K Kamthan, and Manjul Gupta, S****chauder Bases: Behaviour and Stability, Longman, Essex, 1988.*
- ***S K Gupta,*** *Linear Programming and Network Models, East West Press, New Delhi, 1989 (2nd Edition).*
- ***S G Deo and V Raghavendra,*** *Text Book of Ordinary Differential Equations & Stability Theory, 7th reprint, Tata McGraw Hill, 1998.*
- ***S G Deo, V Lakshmikantha and V Raghavendra,*** *Ordinary Differential Equations, Tata McGraw Hill, 2000.*
- ***S C Bagchi, S Madan, A Sitaram and U B Tewari,*** *A First Course on Representation Theory and Linear Lie Groups, University Press, Hyderabad, 2000.*
- ***D Bahuguna, V Raghavendra and B V Rathish Kumar,*** *Editors, Topics in Sobolev Spaces and Applications, Narosa Publications, 2001.*
- ***A Basu and D Kundu,*** Editors, *Statistical Computation, Narosa Publications, 2004.*
- ***C R Bector, S Chandra and J Dutta,*** *Principles of Optimization Theory, Narosa Publications, Delhi, 2004 and Alpha Science Publishers, U.K., 2005.*
- ***S Kumaresan and G Santhanam,*** *An Expedition to Geometry, TRIM Series 31, Hindustan Book Agency, New Delhi, 2005.*
- ***Peeyush Chandra and B V Rathish Kumar,*** *Editors, Mathematical Biology, Anamaya Publishers, 2005.*
- ***D.Bahuguna,*** *Differential Equations and Dynamical Systems, Narosa Publishing House, 2005.*
- ***R. Rao, H. Toutenburg, Shalabh, and C. Heumann,*** *Linear Models and Generalizations - Least Squares and Alternatives, Springer, 2008.*