

# SHIV NADAR

INSTITUTION OF EMINENCE DEEMED TO BE  
UNIVERSITY  
DELHI NCR

## DEPARTMENT OF MATHEMATICS



# Why Shiv Nadar University?

Shiv Nadar University is a multidisciplinary research university established in 2011 by Mr. Shiv Nadar, one of Asia's foremost philanthropists and a pioneer of the technological revolution in India. The four Schools at the university offer undergraduate, postgraduate, and doctoral degrees in Engineering, Natural Sciences, Humanities and Social Sciences, and Management an Entrepreneurship. It is the youngest university recognised as an Institution of Eminence by the Government of India, a distinct category of higher education institutions that "strive to become the top hundred Institutions in the world over time". In the Government's National Institutional Ranking Framework (NIRF), the university has been the youngest institution in the 'Top 100' Overall list for the last five years.



**ANALYTICAL THINKING, CREATIVITY, PROBLEM-SOLVING:**  
with research programs, internships, entrepreneurial opportunities, and more, our curriculum teaches key skills

**PHYSICAL AND EMOTIONAL WELL-BEING:**  
a vibrant campus life on our 286-acre green campus is designed just for that

**ACADEMIC EXCELLENCE:**  
our faculty come from top institutions in India and the world

**JOBS, HIGHER STUDIES OR START-UPS:**  
we prepare our students for a variety of aspirations



# Why Study Mathematics at Shiv Nadar University?

The Department of Mathematics at Shiv Nadar University Delhi-NCR offers programs and courses that embody the interdisciplinary and multidisciplinary nature of the university. Established in 2011, it is one of the founding departments at Shiv Nadar University. Research lies at the core of all our programs. Our academic programs provide intellectual vigour to students by offering academic freedom to understand the fundamentals, abstraction, and beauty of mathematics. Rigorous training and engaging teaching methods allow students to explore the best possible professional paths, such as academia, industry or entrepreneurship. To support such dreams of our students, we are equipped with cutting-edge facilities, an interdisciplinary and adaptable course structure, and accomplished faculty members.

The Department firmly believes that Mathematics is a language for most scientific and technical problems, and a strong base in Mathematics can do wonders. To successfully establish our belief, the Department provides various opportunities for students to learn and nurture their intellectual growth inside and outside the classroom. The Department frequently organises seminars delivered by distinguished mathematical scientists from prestigious institutions aimed at advancing research and providing students with insights into ongoing and frontline mathematical research activities across the globe. The Department understands the challenges and works tirelessly to shape our students for the future who will be the ambassadors of the department and of the university in different and diverse fields with mathematics as a core.

In recognition of its excellence, the Department was awarded the DST-FIST 2015 by the Government of India to establish a state-of-the-art research laboratory with high-end computational facilities and a dedicated computer lab, a dedicated library, both housed in the Department.

# Undergraduate Curriculum

Our cutting-edge curriculum is crafted to equip students with essential mathematical knowledge and skills while also providing them with the flexibility to explore and specialise in their areas of interest. This is achieved through a credit distribution system encompassing core courses and electives. Furthermore, we conduct periodic reviews and updates of our curriculum to ensure that it remains updated with the latest advancements in the field nationally, internationally and provides the students an enriched learning experience.

## B.Sc. Research Mathematics

The B.Sc. Mathematics (Research) degree program incorporates both practical work and research, allowing students to complete a thesis with the guidance of an advisor. This allows students to gain hands-on learning experience and develop practical skills in addition to theoretical knowledge of the subject. Empowerment through rigorous learning and research in fundamental areas of Mathematics and emerging technologies is at the core of the undergraduate program. The Department also offers specialisations in **Applied Algebra and Mathematical Finance**. The program includes an undergraduate thesis as a mandatory credit requirement.



## Minor in Mathematics

Undergraduate students not majoring in Mathematics can take a Minor in Mathematics. A Minor in Mathematics can serve two distinct functions (besides enjoying its beauty and intellectual stimulation):

- (a) Acquiring the academic background for higher studies in Mathematics
- (b) Acquiring modelling and computational skills for applications of Mathematics in other disciplines or in industry.

## Doctoral Program

A Ph.D. in Mathematics can lead to various career opportunities in academia, industry, and government. There are many opportunities for doctorates in Mathematics to establish their professional career in information technology, financial sector, or industrial research labs.

The first semester of the program at the university comprises coursework. Every student must publish at least one research paper in a refereed journal and present their work before thesis submission. Anyone with a master's degree in Mathematics or related disciplines with overall marks of at least 60% (or equivalent grade) is eligible to apply for the program.

Our Ph.D. students publish in good journals, and in the past, they have received grants such as SERB travel, among others. They regularly participate and present their research work at national and international conferences where they have achieved accolades.

## Faculty

The faculty at the Department of Mathematics have studied or worked at leading institutions. They are active researchers and constantly strive to explore new and emerging transdisciplinary knowledge domains relevant to societal benefit and sustainable development goals. The research interests of the Department can be broadly grouped into the following areas: Algebra, Complex System Modelling, Data Science, Functional Analysis & Operator Theory, and Geometry. Some of the interdisciplinary areas in which our faculty has researched in the past include mathematical modelling of real-world scenarios in Finance, Ecology, Medical imaging, Epidemiology, and Bioinformatics. The research by our distinguished faculty has been published in leading journals of international repute.

External Grants received by our faculties include MATRICS (SERB), SERB ECRA, SERB CRG, NBHM, DST-DAAD, SERB-ERC, IBM-SUR, DST-INSPIRE, DST-SERB, Foundation for Ecological Security; The David and Lucile Packard Foundation, IDRC (Government of Canada).

The faculty members have strong research collaborations and are always exploring horizons to establish newer ones. A partial list of some of the leading institutions that we have collaborated with includes ISI, IIT, IISc, Indian Institute of Remote Sensing, ISRO, Wildlife Institute of India (Dehradun), Sorbonne, University of Granada (Spain), University of Cleveland (US), University of Iowa (US), Harvard (US), University of Memphis (US), Southern Illinois University (US), University of Warsaw (Poland), Sapienza University (Italy), IHMR University (Jaipur), FLAME University, UPES (Dehradun), Kerala University of Digital Sciences, Innovation and Technology, Thiruvananthapuram (Kerala), AIIMS (Delhi), IGIB (Delhi).



## Faculty



**Dr. Sudepto Bhattacharya**

Professor & Head, Ph.D., Nagpur University, India  
**Specialization:** Complexity, Game theory, Network Theory, and Mathematical Modelling



**Dr. Indranil Biswas**

Senior Professor, PhD: Tata Institute of Fundamental Research, Mumbai, India  
**Specialization:** Algebraic Geometry, Topology, and Mathematical Physics



**Dr. Amber Habib**

Professor, Ph.D., University of California, Berkeley, USA  
**Specialization:** Representation Theory and Mathematical Finance



**Dr. TSSRK Rao**

Distinguished Professor, Indian Statistical Institute, Kolkata, India  
**Specialization:** Functional Analysis and The geometry of Banach spaces



**Dr. Samit Bhattacharya**

Associate Professor, Ph.D., University of Calcutta, India  
**Specialization:** Applied Mathematics and Computational Biology



**Dr. Sanjeev Agrawal**

Professor, Ph.D., University of Delhi, India  
**Specialization:** Functional Analysis, Operator Theory, Error Correcting Codes, and Encryption



**Dr. Santosh Singh**

Associate Professor, Ph.D., IIT Kanpur, India  
**Specialization:** Medical image analysis, Image reconstruction, Computational photography, Light field, and Optimization techniques



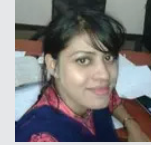
**Dr. Ajit Kumar**

Assistant Professor, Ph.D., University of Houston, Texas, USA  
**Specialization:** Partial Differential Equations, Finite Element Method, and Machine Learning



**Dr. A Satyanarayana Reddy**

Associate Professor, Ph.D., IIT Kanpur, India  
**Specialization:** Algebraic Graph Theory, Discrete Mathematics, and Algebraic Number Theory



**Dr. Neha Gupta**

Assistant Professor, Ph.D., University of Warwick, UK  
**Specialization:** Integer Partition, Neural Codes, and Category Theory



**Dr. Niteesh Sahni**

Assistant Professor, Ph.D., University of Delhi, India  
**Specialization:** Functional Analysis, Operator Theory, Dynamical Systems, and Machine Learning



**Dr. Priyanka Grover**

Assistant Professor & DST - INSPIRE Faculty Ph.D., Indian Statistical Institute, Delhi, India  
**Specialization:** Matrix Analysis and Operator Theory



**Dr. Sneha Lata**

Assistant Professor, Ph.D., University of Houston, Texas, USA  
**Specialization:** Operator Theory, Function Theory, and Frame theory



**Dr. Dipti Dubey**

Assistant Professor, Ph.D., Indian Institute of Technology, Delhi, India  
**Specialization:** Optimization and Game Theory



**Dr. Charu Sharma**

Assistant Professor, Ph.D., Shiv Nadar University, Delhi NCR, India  
**Specialization:** Bioinformatics and Computational Finance



**Dr. Qazi Ajmal Azhad**

Assistant Professor, Aligarh Muslim University, Aligarh, India  
**Specialization:** Statistical Inference and Ordered Random Variables



**Dr. Pradip Kumar**

Assistant Professor, Ph.D. Harish Chandra Research Institute, Allahabad, India  
**Specialization:** Differential Geometry and Global Analysis, and Minimal Surfaces

# Salient Features of the Department

- **Regularly organising workshops and conferences:** National Conference on Cross-Disciplinary Application of Complex Networks (2018), Annual Conference on Indian Women and Mathematics (2018), AFS II (2021), Workshop on Zero Mean Curvature (2022), Winter School on Games in Evolutionary Dynamics (2023), Teacher Enrichment Workshop (2024), National Conference in Operator Theory and Function Spaces (2024).
- **Colloquium & seminars:** Some of the invited speakers in the past - Prof Ravindra B Bapat (ISI Delhi), Prof Niladri Chatterjee (IIT-Delhi), Prof Pradeep Dubey (Stony Brook University), Prof T. E. S. Raghavan (University of Illinois), Prof. Karmeshu (UPES Dehradun), Prof Eknath Prabhakar Ghate (TIFR Mumbai), Prof Adrijit Goswami (IIT Kharagpur), Prof S K Neogy (ISI Delhi), Prof Rajeeva L Karandikar (Chair NSCI, Ex-Director CMI Chennai), Prof Amit Kumar (IIT Delhi)
- **Student-centred activities:** Poster presentations, talks by undergraduate and Ph.D. students, engaging students in activities based on mathematical concepts. The Mathematics Society, run by our undergraduate math students, actively carry out various activities on this front.
- **Initiatives for schools:** Maths Day 2023, online webinars (March 2023, Oct 2023, Dec 2023), school visits to actively engage with the young learners through a variety of enriching and off-routine mathematical ideas and experiments.



# Career Pathways

A Mathematics degree can lead to various career opportunities in academia, industry, and government. There are many opportunities for Mathematics graduates to establish their professional careers in industries such as information technology, financial sector, or industrial research labs.



# Student Outcomes

## Undergraduate Alumni

Our undergraduate students pursue careers in academics from renowned institutions like the National University of Singapore, ETH Zurich, University of Bonn, Johns Hopkins University, St. Petersburg University, The University of Chicago, Arizona State University, Stevens Institute of Technology, Alan Turing Institute of Technology, Tata Institute of Fundamental Research (Mumbai), Institute of Mathematical Sciences (Chennai), University of Hyderabad, Delhi School of Economics.

Some are exploring careers in the corporate world in companies like DE Shaw, Bain, Axis Bank, Noodle.AI, Morgan Stanley, among others.

## Postgraduate Alumni

Our postgraduates have been hired by institutes/universities like ISI, IIT, HRI, Adamas University, Shiv Nadar University (Chennai), Govt. Degree College, Pennsylvania State University (US), Texas A&M University (US), University of South Florida (US), University of Primorska (Slovenia), Columbia University.





# Admissions Eligibility

## Bachelor of Science (Research)

Program	Selection Criteria	Class 12 <sup>th</sup> Eligibility
Mathematics	JEE Mains Score 2024 or 2023	Aggregate of best 4 academic subjects in the marksheet must be $\geq 65\%$ (must include English & Mathematics)
	SNUSAT Score	
	CUET 2024 Score	
	Valid SAT (College Board) Score	
	Valid ACT Score	

For Ph.D admissions refer to [snu.edu.in/programs/phd-in-mathematics](https://snu.edu.in/programs/phd-in-mathematics)

Scan For More Details





# Contact Details

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**BSc (Research) in Mathematics:**

Web: [snu.edu.in/programs/bsc-research-in-mathematics](http://snu.edu.in/programs/bsc-research-in-mathematics)

**Ph.D. in Mathematics:**

Web: [snu.edu.in/programs/phd-in-mathematics](http://snu.edu.in/programs/phd-in-mathematics)

**Department Webpage:**

Web: [math.snu.edu.in](http://math.snu.edu.in)

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Call: 0120-7170177, 3608753

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