

ORGANISERS



CHIEF PATRON

Prof. K. N. Satyanarayana
Director, IIT Tirupati



PATRON

Dr. Ishapathik Das
Head,
Department of Mathematics and Statistics
IIT Tirupati



CONVENER/COORDINATOR

Dr. Panchatcharam Mariappan
Associate Professor
Department of Mathematics and Statistics
IIT Tirupati

IMPORTANT DATES

EVENT	DATE
LAST DATE TO APPLY	SEPTEMBER 20, 2025
SELECTION LIST ANNOUNCEMENT	SEPTEMBER 25, 2025
REGISTRATION	DECEMBER 1, 2025
WORKSHOP DATES	DECEMBER 1-11, 2025
CLOSING SESSION	DECEMBER 11, 2025

ABOUT THE WORKSHOP

The Advanced Training School on Numerical PDE is an intensive program aimed at providing a strong foundation in the numerical treatment of partial differential equations, which are central to modeling real-world phenomena in science and engineering. This winter workshop will cover both the theoretical aspects of PDEs and the practical implementation of numerical methods used to solve them.

Participants will be introduced to a range of topics, including **finite difference, finite element, finite volume, and generalized finite difference methods, as well as stability, convergence, and error analysis**. The program will also include **hands-on coding sessions**, enabling attendees to build and test numerical solvers for linear and nonlinear PDEs using Python. Emerging techniques such as **Physics-Informed Neural Networks (PINNs)** will also be briefly introduced, highlighting how machine learning is being integrated into PDE-based modeling.

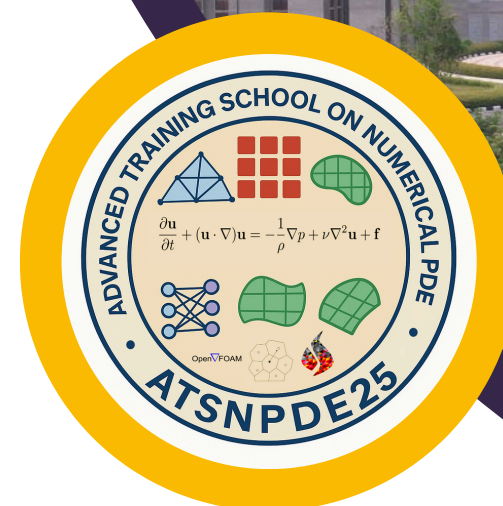
The workshop is ideal for postgraduate students, PhD scholars, and early-career researchers working in mathematics, engineering, or computational science. It also offers a platform to engage with experts in the field, fostering collaboration and guiding participants toward research opportunities in the area of scientific computing and numerical analysis.

Only 30 participants will be selected across India. Selection will be based on academic background, motivation, and interest in the field. Interested candidates may apply through the following link:

<https://forms.gle/9E27fRta8ttqiu4h8>



REGISTER HERE



NBHM
National Board for Higher Mathematics

SPONSORED

ADVANCED TRAINING SCHOOL
ON

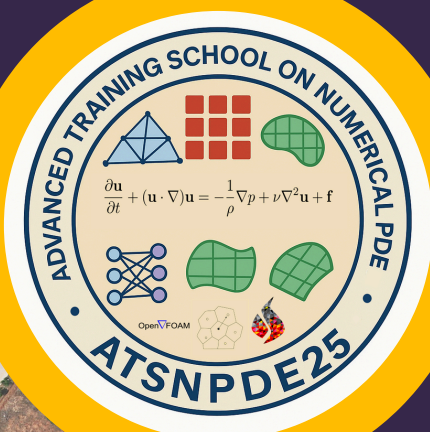
**NUMERICAL PARTIAL
DIFFERENTIAL EQUATIONS
(ATSNPDE25)**

DATE: DECEMBER 1-11, 2025

VENUE: IIT TIRUPATI

WELCOME !

Next Generation of Numerical PDE Solvers



WHAT WE PROVIDE IN THIS WORKSHOP

- **Expert Lectures** by leading researchers from IIT/IISc/TIFR/Universities on numerical PDEs and computational mathematics
- **Hands-on Training Sessions** using Python for implementing numerical methods
- Introduction to Emerging Tools like **Physics-Informed Neural Networks** (PINNs)
- **Workshop Kit** including lecture notes, coding resources, and reference materials
- Introduction of **Open Source Software Tools** like FEniCS and OpenFOAM during the hands-on sessions
- **Certificate of Participation** upon successful completion of the training school
- **Best Participant Certificates** for completing the Project Assignments
- **Networking Opportunities** with peers, faculty, and researchers from academia and industry
- **Group Activities** and Problem-Solving Sessions to reinforce learning
- **Refreshments, Travel Allowance, Accommodation, and Lunch**
- **Special Sessions Talks** by invited speakers from abroad
- Insights into **Current Challenges, Open Problems**, and future directions in the field

FINANCIAL SUPPORT

- For selected participants, TA will be **reimbursed** up to the **3rd AC train fare** or actuals, whichever is less.
- For selected participants, **accommodation** will be provided in a **hostel** at IIT Tirupati on a **shared basis**, subject to availability.

SPONSOR PROFILES



The National Board for Higher Mathematics (NBHM) is an autonomous body in India established in 1983 by the Department of Atomic Energy (DAE). Its primary objective is to foster the development of higher mathematics in the country through funding and support for research, education, and mathematical institutions. NBHM offers various fellowships, scholarships, and grants to students, researchers, and universities to promote mathematical talent and infrastructure. It also supports the publication of mathematical literature, organizes training programs, and plays a key role in shaping national policy related to mathematics education and research. <https://nbhm.dae.gov.in/>



NUMA ENGINEERING SERVICES LTD

NUMA Engineering Services Ltd is a computational engineering consultancy based in Dundalk, Ireland, founded in 2003. The company specializes in simulation, stress analysis, heat transfer, and design optimization for industries such as aerospace, biomedical, and energy. By using advanced tools like OpenFOAM, MSC Nastran, and Solid Edge, NUMA helps clients reduce development time and costs through virtual prototyping. <https://www.numa.ie/>



Flax & Teal Limited is an open-technology consultancy specializing in web platforms tailored for computational engineering, geospatial analysis, and data science. They develop openly-licensed tools and collaborate on R&D projects under Horizon 2020 and InnovateUK, with expertise spanning cloud infrastructure, scientific computing, and open data solutions. <https://flaxandteal.co.uk/>

TENATIVE SPEAKERS AND TOPICS



PROF. V. RAGHAVENDRA

Retired Professor, IIT Tirupati
Topic: **Advanced Topics on PDE**



PROF. NEELA NATARAJ

Professor, IIT Bombay
Topic: **Finite Element Method**



PROF. C. PRAVEEN

Professor, TIFR-CAM
Topic: **Finite Volume Method**



PROF. THIRUPATHI GUDI

Professor, IISc Bangalore
Topic: **Adaptive Finite Element Method**



PROF. JITENDRA KUMAR

Professor, IIT Ropar
Topic: **Finite Difference Method**



PROF. SUMAN KUMAR

Professor, University of Hyderabad
Topic: **Finite Difference Method**



DR. VENKATESWARAN KRISHNAN

Associate Professor, TIFR-CAM
Topic: **Distribution Theory**



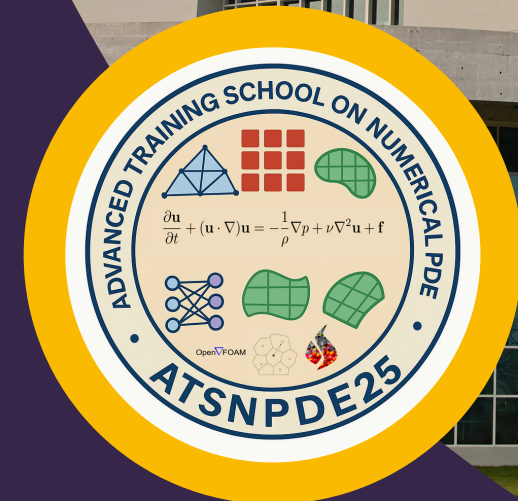
DR. S. AIYAPPAN

Assistant Professor, IIT Hyderabad
Topic: **Sobolev Spaces**



DR. PANCHATCHARAM M

Associate Professor, IIT Tirupati
Topic: **Generalized Finite Difference Method, Physics Informed Neural Network**



DR. RONAN FLANAGAN

Director, NUMA Engineering Services Ltd, Ireland
Topic: **Industrial Applications of Numerical PDEs (Online)**



DR. PHIL T WEIR

Director, Flax & Teal Limited
Topic: **Navier-Stokes Equation Solvers using FEniCS (Online)**



DR. GANGADHARA B

Postdoc, University of Texas Rio Grande Valley
Topic: **Vector Finite Element Method (Online)**



PROF. S. SUNDAR

Director, NIT Mizoram
Topic: **Special Topics on Numerical PDEs (Online)**

ABOUT THE DEPARTMENT

The Department of Mathematics and Statistics at IIT Tirupati, established in August 2019, offers mathematical, statistical, and computing courses for all engineering disciplines of IIT Tirupati at the Undergraduate, Postgraduate, and Research levels. These courses are carefully designed to build strong analytical and quantitative skills essential for modern engineering challenges.

The Department has young, energetic, dynamic, and committed faculty members with teaching and research experience from academia and industry in various topics of Mathematics and Statistics. Our faculty members have expertise in analysis, algebra, number theory, linear algebra, ill-posed problems, scientific computing, differential equations, numerical analysis, numerical linear algebra, high-performance computing, statistical finance, statistical signal processing, environmental statistics, machine learning, design of experiments, statistical inference, nonparametric statistics, time series, and generalized linear models.

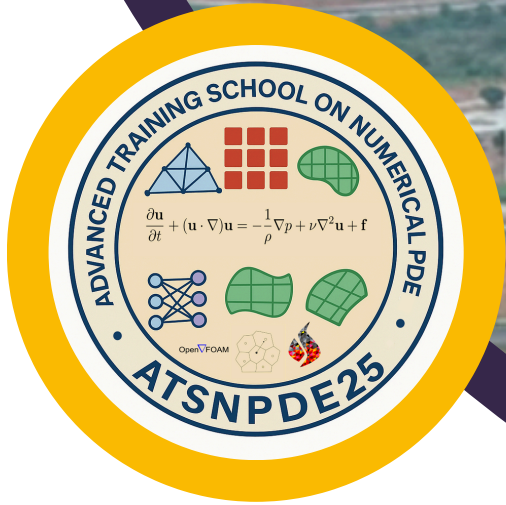
The Department currently offers M. Sc (Mathematics and Statistics), M.Sc (Mathematics), and PhD programmes, providing students with diverse pathways to specialize in pure mathematics, applied mathematics, statistics, and computational sciences. The Department is active in research areas of pure and applied mathematics, industrial mathematics and statistics, machine learning, and data sciences.

ABOUT IIT TIRUPATI

The Indian Institute of Technology Tirupati (IIT Tirupati) was established under the Institutes of Technology Act, 1961. Located on Yerpedu-Venkatagiri Road, Yerpedu Post, Tirupati District, it is the first institute of the third phase of Indian Institutes of Technology, following its announcement in 2014 and foundation stone laying in March 2015. Since its inception, IIT Tirupati has steadily developed as a premier institute dedicated to higher education and research in engineering and technology.

IIT Tirupati currently offers a comprehensive range of academic programs, including Bachelor of Technology (B.Tech), Master of Technology (M.Tech), Master of Science (M.Sc), Master of Public Policy (MPP), Master of Science (Research), and Doctor of Philosophy (Ph.D.). The institute is organized into nine departments, encompassing Chemical Engineering, Chemistry, Civil & Environmental Engineering, Computer Science & Engineering, Electrical Engineering, Humanities & Social Sciences, Mathematics & Statistics, Mechanical Engineering, and Physics.

The institute’s pedagogical framework is designed to foster an environment of innovation and creativity, emphasizing academic excellence and quality. In addition to technical skills, the curriculum encourages teamwork, effective communication, ethical behavior, and a strong sense of social responsibility, preparing graduates to contribute meaningfully to society and global technological advancement.



GET IN TOUCH

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Indian Institute of Technology Tirupati
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0877-250-3358

mst.iittp.ac.in/ATSNPDE25



Tentative Schedule

Days/Time		09:00-10:30		TEA BREAK	11:00-12:30		LUNCH	14:00-15:30		TEA BREAK	16:00-17:30	
1-12-2025	Monday	OS+VR	APDE		NN-1	FEM		CP-1	FVM		NN-2	FEM
2-12-2025	Tuesday	CP-2	FVM		SK-1	FDM		CP-3	FVM		SK-2	FDM
3-12-2025	Wednesday	PyLAB-1	Python Basics		PyLAB-2	Numpy, Scipy		TG-1	FEM		JK-1	Numericals
4-12-2025	Thursday	TG-2	FEM		JK-2	FDM		TG-3	FEM		JK-3	FDM
5-12-2025	Friday	Free	Free		Free	Free		PyLAB-3	FDM		PT	FeniCS
6-12-2025	Saturday	PyLAB-4	FeniCS		PM-1	GFDM		PM-2	GFDM		PyLAB-5	GFDM
7-12-2025	Sunday											
8-12-2025	Monday	VK-1	Distribution		AY-1	Sobolev		VK-2	Distribution		AY-2	Sobolev
9-12-2025	Tuesday	AY-3	Sobolev		VK-3	Distribution		AY-4	Sobolev		VK-4	Distribution
10-12-2025	Wednesday	BG	VFEM		PM-3	PINN		PyLAB-6	PINN		PyLAB-7	PINN
11-12-2025	Thursday	PM-4	PINN		PyLAB-8	PINN		RF	Industry		SS-Closing Session	

OS – Opening Session, VR – Prof. V. Raghavendra, NN – Prof. Neela Nataraj, CP – Prof. C. Praveen, SK – Dr. Suman Kumar, PM – Dr. Panchatcharam M,
VK – Dr. Venketeswaran Krishnan, AY – Dr. S. Aiyappan, TG – Prof. Thirupathi Gudi, JK – Prof. Jitendra Kumar, PyLAB (PM) – Python LAB,
SS – Prof. S. Sundar, PT – Dr. Phil Thomas Weir, BG – Dr. Boregowda Gangadhara, RF – Dr. Ronan Flanagan, Free – Tirupati/Tirumala Visit