



## Faculty Development Program



**VIT**<sup>®</sup>  
Vellore Institute of Technology  
(Deemed to be University under section 3 of UGC Act, 1956)

### Event Outcome


**Title :** Mathematical Bridges: Advancing Interdisciplinary Engineering Through Modeling






**Date :** 2026-03-16 - 2026-03-20

**Time :** 10:00 - 17:30

**Venue :** CDMM 303 & 213

- Knowledge of different mathematical and statistical modelling systems
- Knowledge of mathematical methods in real life and engineering problems
- Knowledge of software tools in mathematical modeling
- Knowledge of Interdisciplinary Modeling Skills Using Computational Tools
- Provide a mathematical Bridges for Interdisciplinary Engineering areas like Geophysical and wave-Structure Interactions Problems, Heat and Mass Transfer, Artificial Intelligence, Numerical modeling, data assimilation, Differential Equations, Design and Optimization, Energy Storage, etc.

	<p><b>Resource Person 1 - Details</b>  <b>Name :</b> Sumit Kumar Vishwakarma  <b>Designation :</b> Associate Professor, Department of Mathematics  <b>University/ Company :</b> BITS Pilani Hyderabad Campus, Medchal  <b>Address :</b> India, 500078.</p>
	<p><b>Resource Person 2 - Details</b>  <b>Name :</b> Yury Stepanyants  <b>Designation :</b> Professor, School of Science Engineering and Digital Technologies  <b>University/ Company :</b> University of Southern Queensland, Toowoomba  <b>Address :</b> Australia, 4350.</p>
	<p><b>Resource Person 3 - Details</b>  <b>Name :</b> Ankit Kumar  <b>Designation :</b> Assistant Professor, Department of Mathematics  <b>University/ Company :</b> VIT Chennai, Chennai  <b>Address :</b> India, 600127.</p>
	<p><b>Resource Person 4 - Details</b>  <b>Name :</b> Subbareddy Bonthu  <b>Designation :</b> Scientist C, NCSCM  <b>University/ Company :</b> National Centre for Sustainable Coastal Management Ministry of Environment Forest and Climate Change Government of India, CHENNAI  <b>Address :</b> India, 600025.</p>
	<p><b>Resource Person 5 - Details</b>  <b>Name :</b> Srinivasa Rao Manam  <b>Designation :</b> Professor, Department of Mathematics  <b>University/ Company :</b> Indian Institute of Technology Madras, Chennai  <b>Address :</b> India, 600036.</p>
	<p><b>Resource Person 6 - Details</b>  <b>Name :</b> STG Raghukanth  <b>Designation :</b> Professor, Department of Civil Engineering  <b>University/ Company :</b> Indian Institute of Technology Madras, Chennai  <b>Address :</b> india, 600036.</p>
	<p><b>Resource Person 7 - Details</b>  <b>Name :</b> Manoj Kumar Mishra  <b>Designation :</b> Assistant Professor, Department of Mathematics  <b>University/ Company :</b> VIT AP, Amaravati  <b>Address :</b> India, 522237.</p>
	<p><b>Resource Person 8 - Details</b>  <b>Name :</b> Shubhangi Dwivedi  <b>Designation :</b> Assistant Professor Grade 1, School of Advanced Sciences  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>

	<p><b>Resource Person 9 - Details</b>  <b>Name :</b> Tapano Kumar Hotta  <b>Designation :</b> Professor Grade 2, School of Mechanical Engineering  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 10 - Details</b>  <b>Name :</b> Kuvar Satya Singh  <b>Designation :</b> Assistant Professor Sr. Grade 2, Centre for Disaster Mitigation and Management  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 11 - Details</b>  <b>Name :</b> Mohankumar K V  <b>Designation :</b> Assistant Professor Sr. Grade 2, School of Mechanical Engineering  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 12 - Details</b>  <b>Name :</b> Juhi Baroi  <b>Designation :</b> Assistant Professor Grade 1, School of Advanced Sciences  <b>University/ Company :</b> VIT, Vellore  <b>Address :</b> India, 632014.</p>
	<p><b>Resource Person 13 - Details</b>  <b>Name :</b> Amarjit Roy  <b>Designation :</b> Assistant Professor, Electrical Engineering  <b>University/ Company :</b> Ghani Khan Choudhury Institute of Engineering and Technology CFTI Under MoE Govt of India, Malda  <b>Address :</b> India, 732141.</p>

## **Resource Person's Profile :**

### **1. Profile of Sumit Kumar Vishwakarma**

Prof. Sumit Kumar Vishwakarma is an Associate Professor of Mathematics at BITS Pilani, Hyderabad. He holds a PhD and M.Sc. from IIT (ISM) Dhanbad. His research focuses on mathematical modeling and wave propagation in complex media to understand geophysical phenomena. A recipient of the SERB-DST Early Career Research Award, he has collaborated internationally with institutions in China and Japan. He is an active mentor, having guided numerous Ph.D. and M.Sc. students to completion.

### **2. Profile of Yury Stepanyants**

Professor Yury Stepanyants is an esteemed Adjunct Faculty at VIT Vellore and Honorary Professor at UniSQ. With over 50 years of experience, he holds a PhD in Physical Oceanography and a Doctor of Sciences in Geophysics. His expertise spans nonlinear dynamics, fluid mechanics, and wave oscillations. A Fellow of the Australian Institute of Physics and former ANSTO scientist, he is a prolific researcher and editor with distinguished academic titles from Russia, France, and Australia.

### **3. Profile of Ankit Kumar**

Dr. Ankit Kumar is an Assistant Professor of Mathematics at VIT Chennai. He earned his PhD from BITS Pilani (2021), specializing in Mathematical Modelling in Biology and Nonlinear Analysis. His expertise includes Ecological Modelling, Epidemiology, and Ecotoxicology, with a specific focus on bifurcation and chaos. Since joining VIT in 2022, he has been a key contributor to the School of Advanced Sciences, applying mathematical tools to solve complex biological and environmental problems.

### **4. Profile of Subbareddy Bonthu**

Dr. Subbareddy Bonthu is a Scientist C at the NCSCM, Ministry of Environment, Forest and Climate Change. With a PhD from IIT Kharagpur in Physical Oceanography, he specializes in atmosphere-ocean modeling, air sea interactions, and dispersion systems. His work is vital to shoreline management, ocean circulation, and coastal safety risk assessments. Formerly a guest faculty at Anna University, he is a prolific researcher focused on hydrodynamic conditions and extreme weather impacts.

### **5. Profile of Srinivasa Rao Manam**

Prof. S R Manam is a Professor of Mathematics at IIT Madras, joining in 2007. He specializes in nonlinear wave mechanics, integral equation methods, and wave-structure interactions. A former Alexander von Humboldt Fellow and Technion postdoc, his research is widely published in top journals like Wave Motion. He is a key contributor to Differential Equations and Applied Mathematics, advancing the study of water wave scattering and fluid-structure dynamics.

### **6. Profile of STG Raghukanth**

Prof. S.T.G. Raghukanth is a Professor of Civil Engineering at IIT Madras, specializing in Structural Engineering. With a PhD from IISc Bangalore, his expertise covers earthquake engineering, seismology, and structural dynamics. He has developed critical models for seismic ground motions and contributed to India's seismic zone mapping. A recipient of the 2023 National Geoscience Award, his work integrates machine learning with computational mechanics and random vibrations.

### **7. Profile of Manoj Kumar Mishra**

Dr. Manoj Kumar Mishra is an Assistant Professor of Mathematics at VIT-AP. With a PhD from IIT (ISM) Dhanbad and an M.Sc. from IIT Guwahati, he specializes in Applied Mathematics, focusing on Magnetohydrodynamics (MHD), nanofluid dynamics, and heat transfer. His research involves numerical simulations of non-Newtonian fluid flows and entropy generation. He is dedicated to solving complex engineering problems through advanced mathematical modeling and computational innovation.

### **8. Profile of Shubhangi Dwivedi**

Dr. Shubhangi Dwivedi is an Assistant Professor of Mathematics at VIT Vellore. She earned her PhD in Mathematical Ecology from IIT Mandi. Her expertise includes dynamical systems, chaos control, synchronization, and species migration modeling. Beyond her academic role, she has experience as an AI Model Trainer at Turing. An active researcher and editor, she collaborates internationally on complex biological systems and habitat synchrony.

### **9. Profile of Tapano Kumar Hotta**

Dr. Tapano Kumar Hotta is a Professor of Thermal and Energy Engineering at VIT Vellore. With a PhD from IIT Madras, he specializes in heat transfer enhancement, EV battery thermal management, and electronic cooling. He has secured funding from the British Council and SERB, holding several patents. A Best Scientist Award (2021) recipient, he collaborates with global firms like Mahindra Electric and Trane Technologies to advance thermal energy storage.

### **10. Profile of Kuvar Satya Singh**

Dr. Kuvar Satya Singh is an Assistant Professor at VIT Vellore, associated with the Centre for Disaster Mitigation and Management. He holds a PhD from IIT Kharagpur in Numerical Modeling of Extreme Events. His expertise spans data assimilation, climate modeling, and disaster mitigation. A recipient of multiple DST-SERB grants (CRG, ECR), he collaborates globally with institutions in Japan and the USA to advance the numerical prediction of environmental risks.

### **11. Profile of Mohankumar K V**

Dr. K V Mohankumar is a Senior Assistant Professor at VIT Vellore in the School of Mechanical Engineering. With a PhD from IIT Madras, he specializes in nonlinear continuum mechanics and constitutive modeling of soft materials and biological tissues. His research bridges fundamental science and industry, including consultancy with Apollo Tyres on rubber fatigue and a startup for gait rehabilitation. He is an expert in finite element modeling and viscoelastic materials.

### **12. Profile of Juhi Baroi**

Dr. Juhi Baroi is a faculty member at VIT, associated with the School of Advanced Sciences. Her academic work focuses on Solid Mechanics, and she is also recognized as a research guide in this domain. With experience in teaching and research, she contributes to the development of mathematical and engineering concepts among students.

### **13. Profile of Amarjit Roy**

Dr. Amarjit Roy is an Assistant Professor in the Department of Electrical Engineering at the Ghani Khan Choudhury Institute of Engineering and Technology, Malda. He holds a Ph.D. in Electronics and Communication Engineering from NIT Silchar, with expertise in digital image processing, machine learning, and AI. He has significant teaching and research experience across reputed institutions.

This Faculty Development Programme (FDP) focuses on establishing Mathematical Bridges exploring the critical role of advanced mathematical modeling in addressing complex, interdisciplinary challenges across various engineering and scientific domains. The program provides a comprehensive platform for academics and researchers to delve into the theoretical underpinnings and practical applications of mathematical techniques at the convergence of fundamental sciences and applied engineering. The FDP is structured around several key areas of modeling and analysis, offering both analytical and numerical mathematical methods as essential tools: Wave Mechanics Modeling: Deep dives into the formulation and solution of differential equations governing complex physical systems, including Water Wave Mechanics Modeling (e.g., coastal engineering, tsunamis) and Solid Wave Mechanics Modeling (e.g., seismic waves, non-destructive testing). Geophysical and Environmental Modeling: Focus on large-scale simulations for forecasting and risk assessment, covering Geophysical Hazards Modelling (e.g., earthquakes, landslides). Weather Prediction Modelling, and Atmosphere and Dispersion Modelling (e.g., pollutant dispersal, air quality). Transport Phenomena and Optimization: Examination of coupled systems through. Heat and Mass Transfer Modelling, including applications in chemical processes and energy. This extends to advanced topics in Design, Optimization, and Energy Storage systems, where mathematical programming and control theory are critical. Computational and Data-Driven Approaches: Training on practical implementation, including the use of Software and Tools for Mathematical Modeling (e.g., MATLAB, Python, open-source platforms).

MATLAB, Python, open-source platforms

**Coordinator's: Prof. PARVEZ ALAM 16196 - Assistant Professor Sr. Grade 1 - SAS  
Prof. TABINDA NAHID 19552 - Assistant Professor Grade 2 - SAS**