

LITTLE FLOWER DEGREE AND PG COLLEGE
UPPAL, HYDERABAD-500039

The department of mathematics organised a five-day online national professional development programme in collaboration with Sonapur College, Sonapur, Assam, from 4 to 8 September, 2023, from 2.00 p.m. to 4.30 p.m. on ‘Computational Fluid Dynamics Methods and Applications’ in Online mode. The objective of the program was to understand computational fluid dynamic methods and find the solutions of partial differential equations.

The resource person for Day 1 was **Prof. Jiten Chandra Kalita**, Assistant Professor, IIT Guwahati, who delivered a lecture on the topic “**scientific computing and turning aero foil into swimming fish**”. Prof. Jiten Chandra Kalita explained the importance of scientific computing by taking live examples from our day-to-day life. He focused on the main areas of mathematics, namely fluid dynamics and partial differential equations.

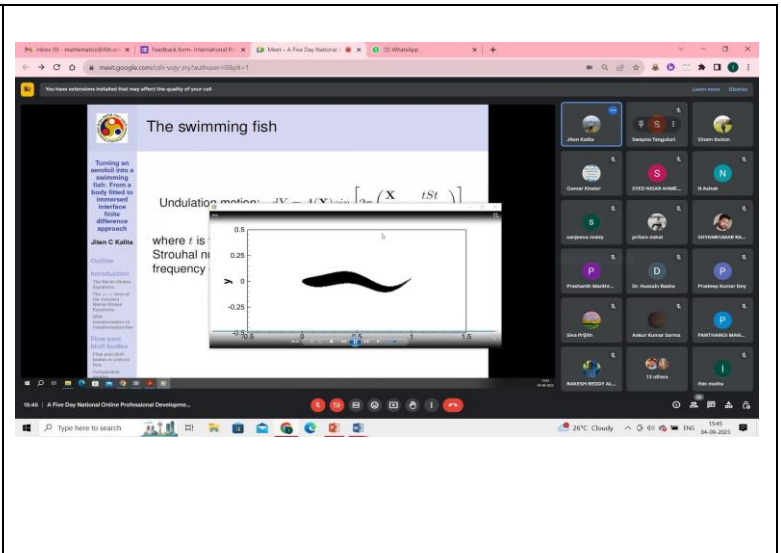
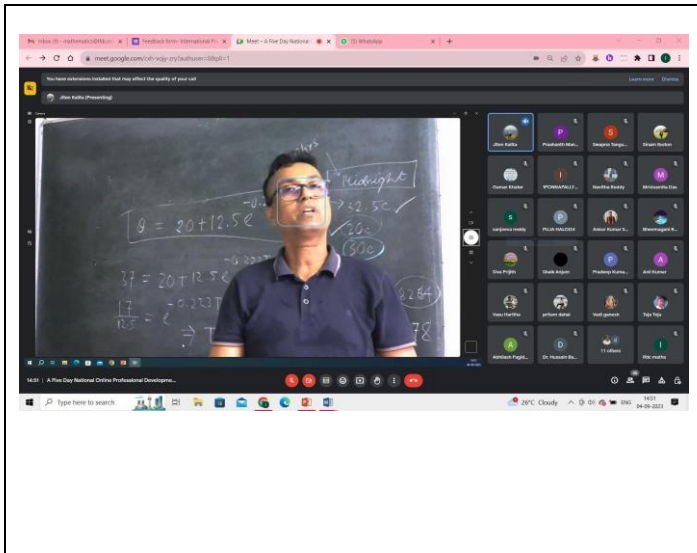
The resource person for Day 2 was **Dr. Shankar Rao Munjam**, Assistant Professor of Mathematics, School of Technology, Woxsen University, Hyderabad. Telangana, India, and Adjunct Professor, Department of Basic Sciences, University of the Peoples, Pasadena, California, USA. He talked on the topic “**Analytical Solution of Fractional Order Non-Linear Vander Pole Equations**”. His talk focused on Vanderpole equations with initial pole conditions, fractional order derivatives, and how they are used in day-to-day life.

The resource person for Day 3 was **Dr. Anjanna Matta**, Assistant Professor of Mathematics, IFHE University, who provided insights about **methods of solutions PDE in fluid dynamics**.

The resource person for Day 4 was **Prof. Shuvam Sen.**, Professor of Mathematics, Tezpur University. The topic for the presentation was **The fourth-order compact discretization of the incompressible N-S equations in deformable domains**. Sir explained the first and second order problems by using finite difference method, basics of compact scheme for compressible and non compressible flows by using the finite difference method, time varying domains by immersed boundary methods.

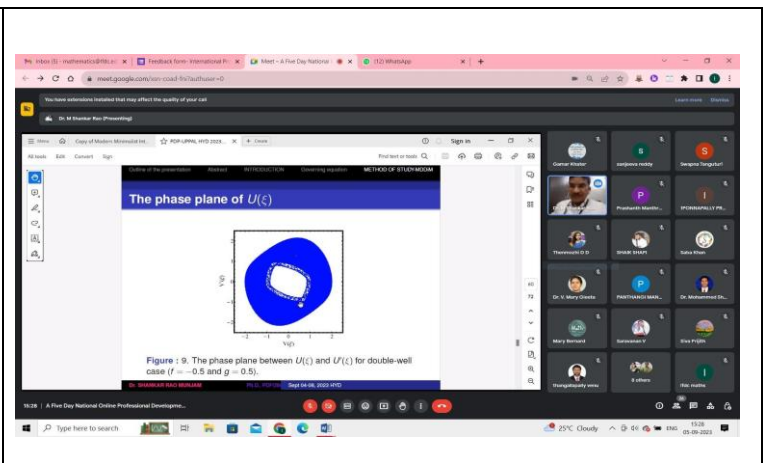
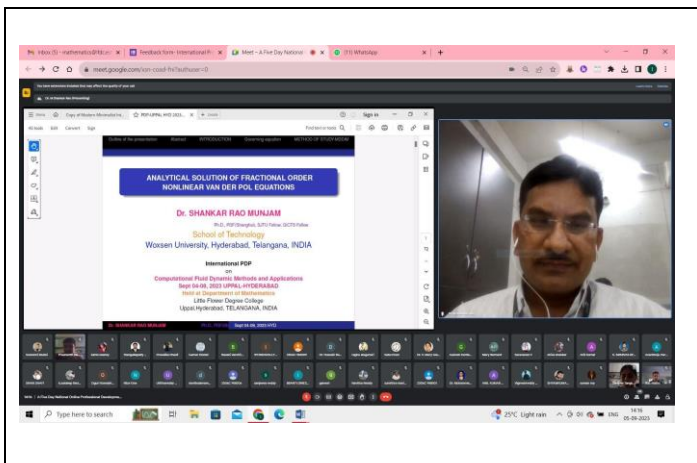
The resource person for Day 5 was **Prof. A. Maruthi Prasad**, Professor of Mathematics, Gitam Deemed to be University, who provided insights about **methods to get solution**. This resource person started the session by explaining the mathematical partial differential equations. and converting PDEs into ODEs and solving them by using numerical methods. This five-day programme was interesting, inspiring, and informative to the faculty members and even to the research scholars.

DAY - I



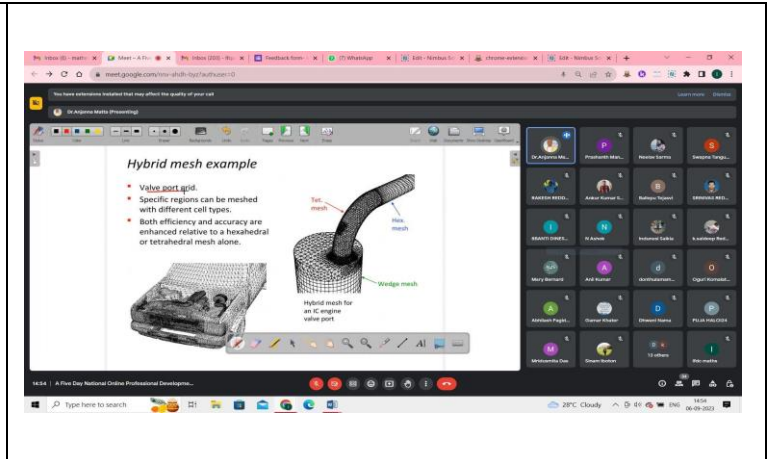
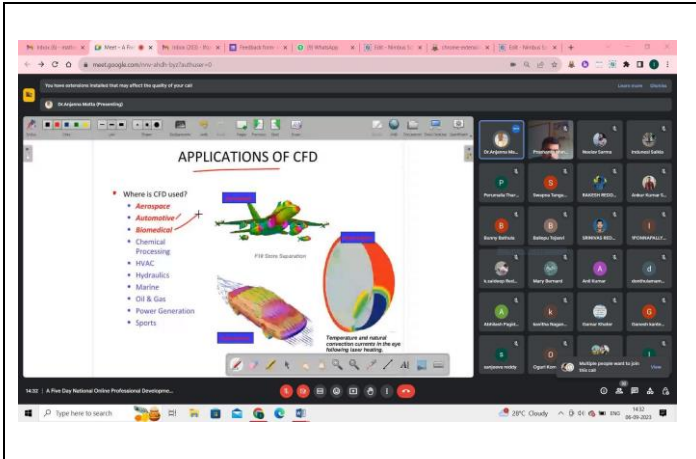
Prof. Jiten Chandra Kalita, Assistant Professor, IIT Guwahati, is explaining about "scientific computing and turning an aero foil into swimming fish."

DAY -II



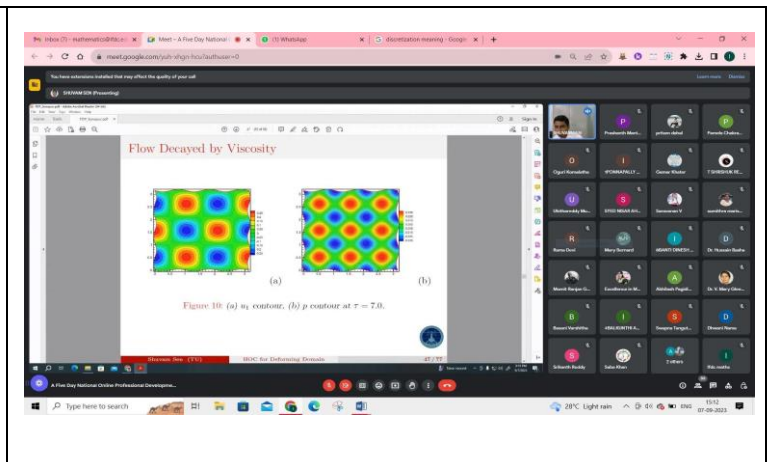
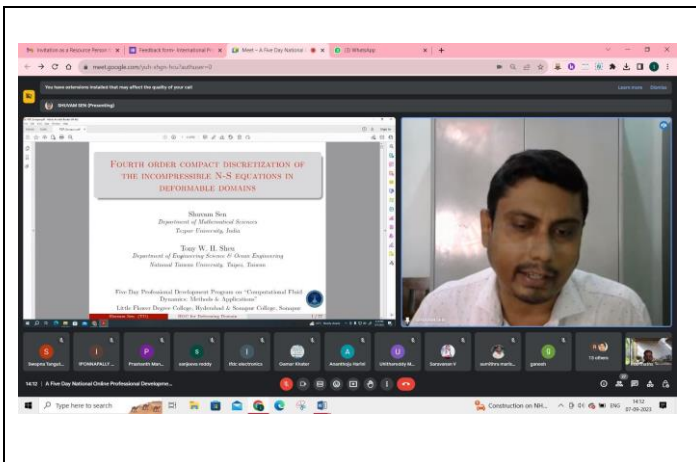
Dr. Shankar Rao Munjam, Assistant Professor of Mathematics, School of Technology, Woxsen University, Hyderabad, Telangana, is taking a session on "Analytical Solution of Fractional Order Non-Linear Vander Pole Equations."

DAY -III



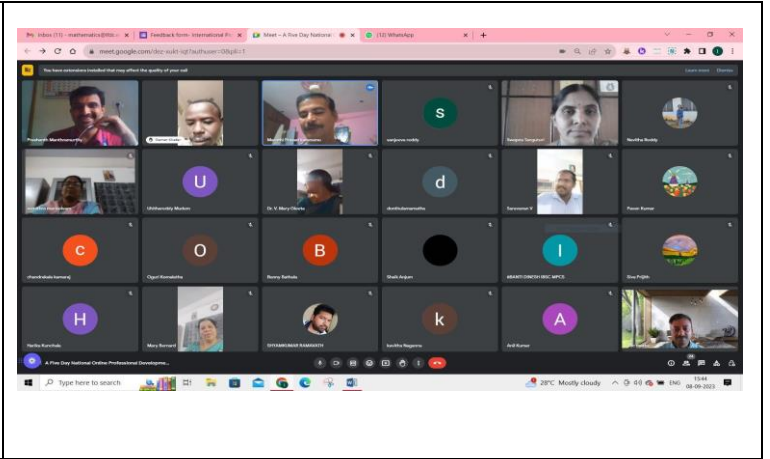
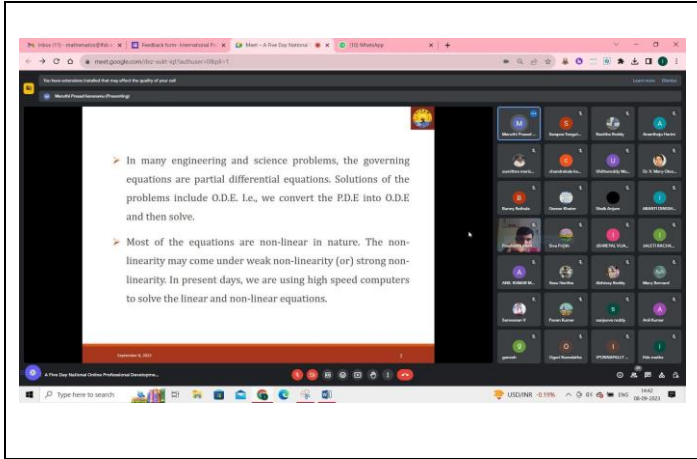
Dr. Anjana Matta, Assistant Professor of Mathematics, IFHE University, provided insights about methods of solutions of PDE in fluid dynamics.

DAY -IV



Prof. Shuvam Sen, Professor of Mathematics, Tezpur University, University taking a session on the fourth-order compact discretization of the incompressible N-S equations in deformable domains.

DAY –V



Prof. A. Maruthi Prasad, Professor of Mathematics, Gitam Deemed to be University, provided insights about **methods of solution**.