

Guest Lecture on
“Mathematical Modeling with Differential Equations”

Organized by: Department of Mathematics and Statistics

Date: 14th August 2025

Report

Resource Person:

Dr. Srinivasa Rao Thota, **Associate Professor, Chairperson**, Amrita Vishwa Vidyapeetham, Amaravati, Andhra Pradesh.

Objectives of the Guest Lecture:

- To introduce students to the fundamentals of mathematical modeling using differential equations.
- To help students understand how differential equations are used to describe and analyze real-world phenomena.
- To enable students to formulate simple models from scientific or physical problems.
- To bridge the gap between mathematical theory and practical applications in science, engineering, and economics.

Significance & Outline of the Programme:

The guest lecture focused on the use of differential equations in constructing mathematical models that represent dynamic systems. The session began with a brief introduction to the concept of modeling and the types of differential equations.

The resource person explained key topics such as:

Solution Methods:

- Separation of variables
- Integrating factors
- Numerical solutions using Euler’s method (basic overview)

Interpretation of Solutions:

- Understanding graphs, stability of solutions, and long-term behavior.

Applications in Real Life:

- Population growth and decay models
- Spread of infectious diseases (SIR models)
- Newton's Law of Cooling
- Motion under gravity and resistance

The resource person engaged the students with practical examples and simple exercises to illustrate how real-world problems can be translated into differential equations and solved or interpreted accordingly.

Outcomes of the Guest Lecture:

1. Students gained a clear understanding of how mathematical models are built using differential equations.
2. They learned to derive differential equations from given situations and apply solution techniques.
3. Students explored various real-world examples where differential equations are widely used.
4. They understood the importance of interpreting the results of models to draw meaningful conclusions.
5. The session also encouraged analytical thinking and promoted interest in applied mathematics and research.

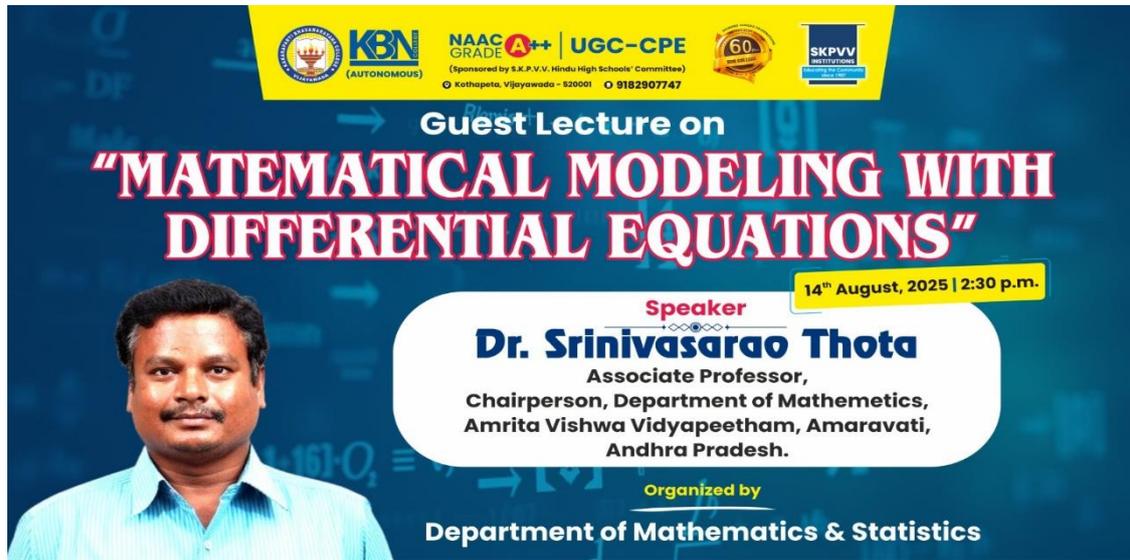
Participants:

Our beloved Principal, Dr. G. Krishna Veni; Vice-Principals, Sri P. L. Ramesh and Dr. M. Venkateswara Rao; Dr. K. Rama Krishna; IQAC Coordinator, Smt. Shamim; Head of the Department, Smt. K. Vanama Devi; all faculty members of the Department of Mathematics and Statistics; and around 100 students from III B.Sc & II B.Sc enthusiastically participated in the programme.

Conclusion:

The guest lecture was informative and beneficial for the students, providing a deeper insight into how mathematical theory is applied to understand and solve

complex real-world issues. The interactive and example-driven approach of the speaker made the session lively and engaging.



The poster features a blue background with mathematical symbols like π , ∞ , and \rightarrow . At the top, there are logos for KBN (Autonomous), NAAC Grade A++, UGC-CPE, a 60th anniversary emblem, and SKPVV. The main title is "Guest Lecture on 'MATHEMATICAL MODELING WITH DIFFERENTIAL EQUATIONS'" in large, bold, red and white letters. Below the title, a photo of Dr. Srinivasarao Thota is shown on the left. To the right, his name and title are listed: "Speaker Dr. Srinivasarao Thota, Associate Professor, Chairperson, Department of Mathematics, Amrita Vishwa Vidyapeetham, Amaravati, Andhra Pradesh." The date and time "14th August, 2025 | 2:30 p.m." are in a yellow box. At the bottom, it says "Organized by Department of Mathematics & Statistics".



