

REPORT

Workshop on Numerical Methods and its Applications in various Allied Fields of Sciences with Mathematica

(17th to 22nd Sept. 2018)

JOINTLY ORGANISED BY DEPT. OF MATHEMATICS AND DEPT. OF ELECTRONICS

under the Aegis of DBT Star College Scheme

Department of Mathematics along with Department of Electronics organised a five day workshop on Numerical Methods and its Applications in various Allied Fields of Sciences with MATHEMATICA Under the Aegis of DBT Star College Program on 17th September – 22nd September 2018.

About the Workshop

The purpose of this workshop was to bring together the students interested to explore the subject of “NUMERICAL METHODS AND ITS APPLICATIONS WITH MATHEMATICA”. The workshop helped the students to find the best possible solutions of Equations, System of Equations, Differential Equations and different types of related problems. Students learnt through MATHEMATICA how to write codes of different methods, discussed the existing errors to find best possible solutions. Discussion on various types of errors enhanced the knowledge of sources of errors and how to manage them. Theoretical sessions were followed by hand-on sessions with case studies covering the applications in various allied fields of sciences. Knowledge of the methods can be utilized at any platform to solve their own research problems in future and problems at their workplace.

Resource persons:

- Dr. Nilam, Assistant Professor, Department of Mathematics, DTU. Research interests: Mathematical Modeling and simulation, Diabetes: Prevention and Control, Infectious Diseases.
- Dr. Vivek Kumar Aggarwal, Assistant Professor, Department of Mathematics, DTU, Research interests: Numerical Analysis and Computation, Hyperbolic Conservation laws, Singularly, Perturbed Problems.
- Dr. Mani Mehra, Associate Professor, Department of Mathematics, Indian Institute of Technology, Delhi, Research interests: Numerical methods, Wavelet methods for PDEs, Inverse problem.

Target Audience: Undergraduate science students

On the first day of the workshop Dr. Nilam discussed Numerical Methods and Errors, error propagation and Computer Arithmetic. Introduction to Mathematica and related problems were discussed in Hands on sessions.

Next day Dr. Vivek covered the topics related to Numerical Methods and Solutions of Equations. Further Algorithms of various iterative methods and absolute relative approximate errors were discussed. Coding of di related Numerical Me with related problems in Hands on sessions.

Third day Dr. Vivek discussed Numerical Methods in Linear Algebra. Solving system of linear equations and relative approximate errors were taken up. Program coding in Mathematica was done with related problems in Hands on sessions.

Dr. Mani discussed Numerical Methods and Integration., Gaussian Quadrature rule on day four. Related problems were taken up in Hands on sessions.

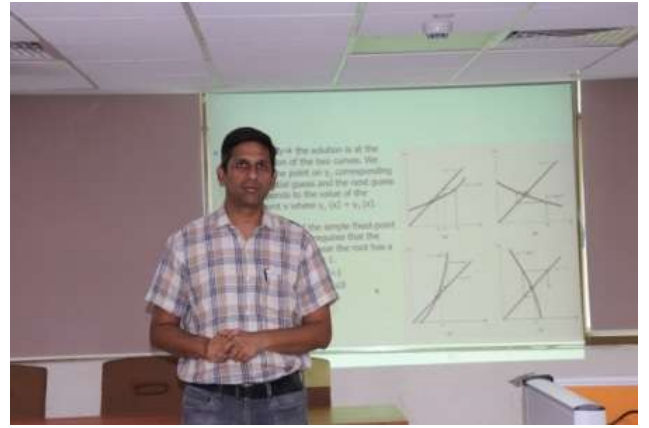
On day Five Dr. Nilam discussed Differential equations and Numerical methods used to solve them, followed by Hand on sessions on related problems.

Mr. Sudhakar Yadav, Mr. Chhatra Pal, Ms. Kanica Goel and Mr. Abhishek Kumar guided students in Hands-on sessions along with the resource persons.

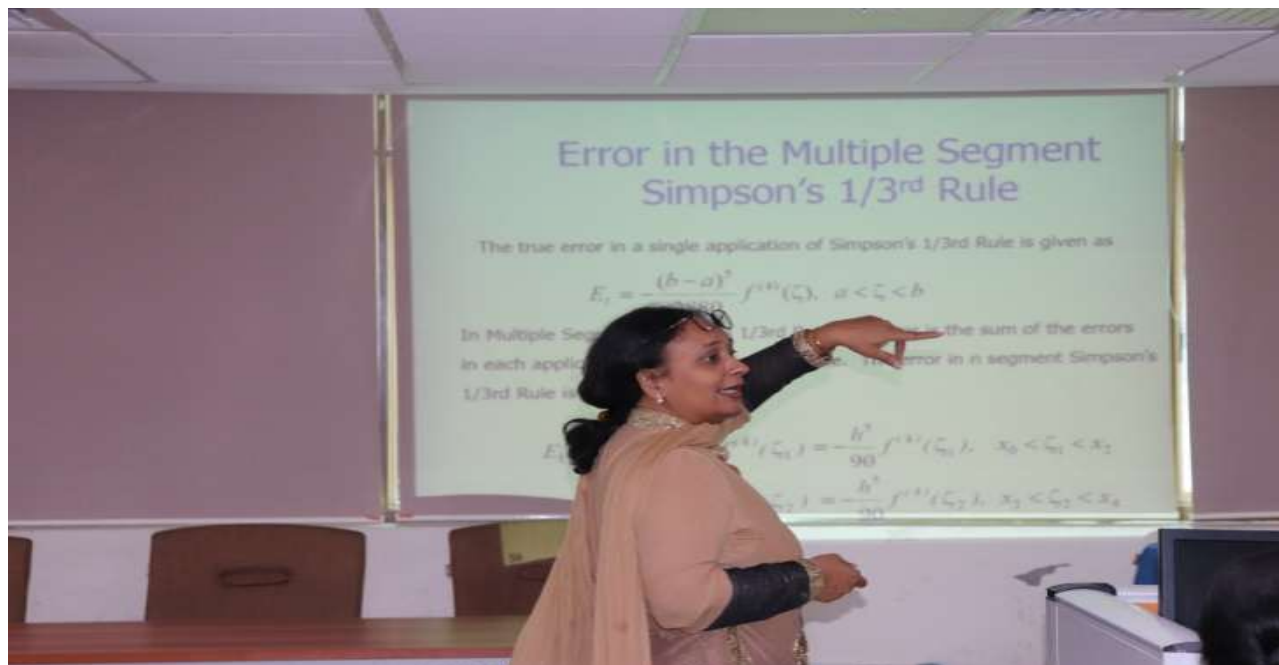
Students from different colleges - Miranda House, Motilal Nehru College, Ramanujan College, Kalindi College, Maitreyi college, ARSD college and DDUC participated in the workshop.

DAY I of the workshop





DAY IV of the workshop



DAY V of the workshop





LIST OF THE PARTICIPANTS

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