SCIENTIFIC COMPUTING USING MATLAB

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TYPE OF COURSE: New | Core | UG/PG
COURSE DURATION: 12 weeks (20 Jul’ 20 - 9 Oct’ 20)
EXAM DATE: 17 Oct 2020

PRE-REQUISITES: Some knowledge of any programming language
INTENDED AUDIENCE: UG/PG students
COURSE OUTLINE:
In the first week of this course, an introduction to Matlab is introduced with hands on Matlab software. In the subsequent weeks, topics will be introduced followed by hands on to write the Matlab code of the same topics. This course is very useful for the students who wants to do research projects using numerical techniques to handle data or to solve differential equations.

ABOUT INSTRUCTOR:
Prof. Mani Mehra is presently working as an Associate Professor in the department of Mathematics, IIT Delhi. She earned her PhD from IIT Kanpur in 2005.

Prof. Vivek Kumar Aggarwal in presently worked as an Assistant Professor dept. of Applied Mathematics, DTU Delhi. He earned his PhD in Mathematics from IIT Kanpur in 2005.

COURSE PLAN:
Week 1: Introduction to Matlab
Week 2: Error estimation and methods of roots finding
Week 3: Solving System of Linear Algebraic equations
Week 4: Curve fitting and Interpolation
Week 5: Numerical differentiation
Week 6: Numerical Integration
Week 7: Numerical Optimization
Week 8: Problem solving session
Week 9: Numerical solution of Initial value problems (IVP)
Week 10: Discussion about Convergence of numerical schemes
Week 11: Numerical solution of Boundary value problems (BVP)
Week 12: Discussion and Problem-solving session