PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS026/2022

Introduction to Numerical Methods

Name of the PMRF student

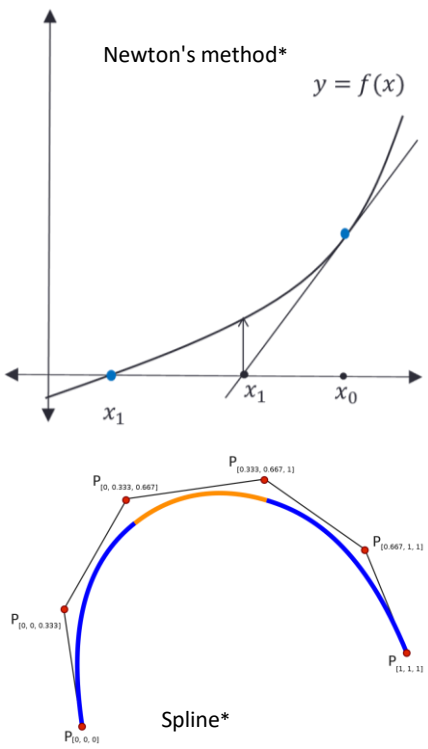
Anay Shembekar

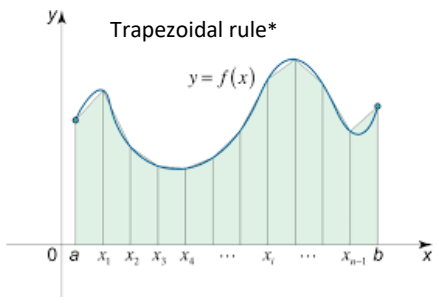
Required background of the students taught

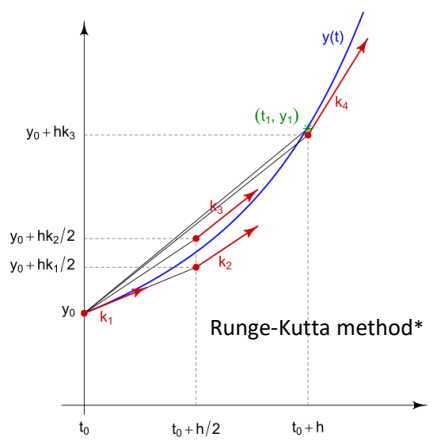
Any UG/ PG students majoring in Mechanical/Aerospace/Civil Engineering who have completed first level courses in Differential Equations & Linear Algebra

Online session coordinator

Will be chosen from the list of registrants







Details of the content of the module

This is a first course introducing numerical methods used regularly by engineers. This course will help students develop an understanding of various techniques used for numerically solving polynomial equations & differential equations (ODE & PDE).

1. Polynomial root finding methods: Bisection method, Newton's method, Secant method, Convergence of Newton's method
2. Quadrature methods: Midpoint rule, Trapezoidal rule, Simpson's rule, Gaussian quadrature
3. Interpolation methods: Piece-wise linear interpolation, Cubic spline interpolation, Lagrange interpolation
4. Methods for ODEs & PDEs: Analytical solutions, Numerical differentiation, Euler's method, Runge-Kutta methods, Von Neumann stability analysis

Schedule of the module

Starts on 26th Aug 2022

Timings: Every Friday 7:00PM – 8:00PM

Total 12 sessions

Meeting link : Will be shared later

Contact email ID: isss.forum@gmail.com

Registration link: https://forms.gle/YRkD3arfwuPvRx6z7

*Adapted from Creative Commons