PimpriChinchwad Education Trust's **PimpriChinchwad College of Engineering** Sector No. 26, Pradhikaran, Nigdi, Pune – 411 044

COURSE OUTLINE

Department: AS&H   A.Y.:2022-23 SEM-II   Date:27th Feb,2023.
Class: S.Y. B. Tech [All programs]

Name of the Course: **Numerical Methods**

Relevance of the course:

Numerical Methods provide efficient and reliable solutions to the problems arising in different areas of Mathematics. It is an extremely powerful technology that enables companies/organizations to solve complex real world problems and provide solution quickly and easily compared to analytic solutions.
Mathematical programming allows you to capture the key features of a complex real-world problem.
This course requires basic knowledge of following courses:
- Linear Algebra and Univariate calculus
- Multivariate calculus
- Applied Mathematics

Course Outcomes:

CO No	CO Statement	No. of Lectures Planned	Content Delivery method	Assessment tools Planned
1	Apply numerical methods to solve the system of linear equations.	6	**PPT, chalk and board, Quiz, Videos**	**MTE, ETE**
2	Perform different numerical methods to solve differentiation and integration.	6	**PPT, chalk and board, Quiz, Videos**	**MTE, ETE**
3	Understand basic operators, packages, syntax of software to develop programs for system of linear equation, differentiation and integration.	6	**PPT, Demonstration, Videos**	**IE1 (Task submission), MTE, ETE**
4	Apply single and multistep numerical methods to ordinary differential equations of first order analyzing engineering problems.	4	**PPT, chalk and board, Quiz, Videos**	**MTE ETE**
5	Apply explicit and implicit methods to partial differential equations for analyzing heat, wave and Laplace equations.	8	**PPT, chalk and board, Quiz, Videos**	**MTE ETE**
6	Develop program for Numerical Methods using open source software.	6	**PPT, Demonstration, Videos**	**IE2 (Task submission), MTE, ETE**

Internal Evaluation:

Tools	Assessment tools with tentative dates (*Quizzes, mini project, research paper based assignment etc.*)	Marks	Mapped COs
IE1	Open Ended Activity: Task submission using Software programming on problems related system of linear equations [11/04/2023]	10	CO3
IE2	Open Ended Activity: Task submission using Software programming on problems related to differentiation and Integration [30/05/2023]	10	CO6

Course Faculty SY OE B
Mr. Rahul Deshmukh
Email: rahul.deshmukh@pccoepune.org

Course Faculty SY OE C
Mr. Sanjay Mapari
Email: sanjay.mapari@pccoepune.org

Course Faculty SY OE A,D and Course Coordinator
Dr. Shaziya Shaikh
Email: shaziya,shaikh@pccoepune.org
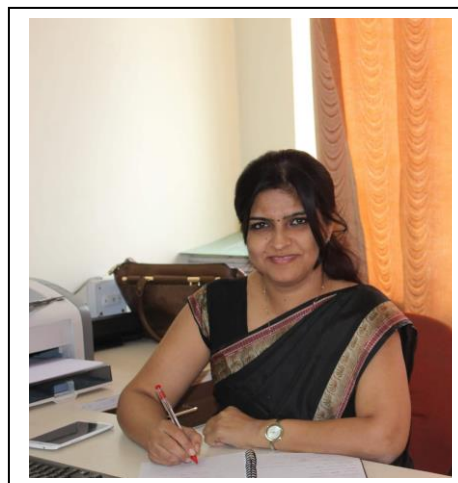
Module Coordinator [Mathematics]
Dr. Leena Sharma
Email: leena.sharma@pccoepune.org