CH202 Aug 3:0

Numerical Methods

Instructor

Bhushan Toley
Email: bhushan@iisc.ac.in

Teaching Assistant

Email:

Department: Chemical Engineering

Course Time: Tu-Thu 2:00 - 3:30

Lecture venue: Chemical Engineering Seminar Hall

Detailed Course Page:

Announcements

Brief description of the course

This course introduces basic numerical methods in mathematics with focus on training students to use a

computational program to execute numerical algorithms. This can be taken by graduate as well as

undergraduate students.

Prerequisites

Knowledge of basic matrix algebra and differential equations.

Syllabus

Basics of scientific computing, basics of Matlab programming, solutions of linear algebraic equations,

eigenvalues and eigenvectors of matrices, solutions of nonlinear algebraic equations, Newton-Raphson

methods, function approximation, interpolation, numerical differentiation and integration, solutions of

ordinary differential equations â€" initial and boundary value problems, solutions of partial differential

equations, finite difference methods, orthogonal collocation.

Course outcomes

- Using Matlab to execute numerical algorithms

- Numerical solutions of multivariable nonlinear algebraic equations

- Data fitting algorithms

- Finite difference techniques for solving differential equations

Grading policy

50% for final

30% for midterms

20% for assignments

Assignments

Total 3 assignments

Resources

Gupta S.K., Numerical Methods for Engineers, New Age International Publishers, 3rd edition, 2015