



# Indian Institute of Technology

## Course Details Report

**Course No: CH6060**

**Course Name: Numerical Tech for Engrs**

**Course Type:**

Theory

**Description:**

Analysis of numerical procedures suitable for digital simulations. Treatment of data using orthogonal and nonorthogonal expansions, nonlinear estimation techniques, numerical solution of ordinary and partial differential equations; error propagation and stability analysis.

**Course Content:**

Steady state Processes: Vector space, Algebraic systems, Linear system and solution: Direct and iterative processes, Non linear systems: Iterative processes

Unsteady state processes: Initial value problem and solution: Implicit and explicit methods, time integration methods, boundary value problems, shooting method, finite difference method, finite volume method and finite element method

**Text Books:**

1. S. K. Gupta, 'Numerical methods for Engineers', New Age Publisher, 1995.

**Reference Books:**

1. M.L. James, G.M. Smith and J.C. Wolford, "Applied Numerical Methods for Digital Computation", Harper 7n Row Publishers, 1985. 2. H.S. Mickley, T.S. Sherwood and C.E. Reed, "Applied Mathematics in Chemical Engineering", McGrawHill, 1957.