Title   Numerical Analysis of Ordinary Differential Equations

Textbook   Numerical Methods for Ordinary Differential Equations 2nd Edition by John C. Butcher.

Description   Theory and implementation of numerical methods for initial and boundary value problems in ordinary differential equations. One-step, linear multi-step, Runge-Kutta, and extrapolation methods; convergence, stability, error estimates, and practical implementation, Study and analysis of shooting, finite difference and projection methods for boundary value problems for ordinary differential equations.

Topics	# of weeks
Chapter 1: Differential and Difference Equations	3
Chapter 2. Numerical Differential Equation Methods	3
Chapter 3. Runge–Kutta Methods	3
Chapter 4. Linear Multistep Methods	3
Chapter 5. General Linear Methods	3

Grading policy:

Assignments: 30 %
Exam I: 30 %
Final Exam (Comprehensive) : 40 %