

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
Department of Mathematics & Statistics
MATH 571 - Numerical Analysis of Ordinary Differential Equations
Course Syllabus

Instructor:

Dr. Manal Alotibi

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Office hours:

Sunday and Tuesday, 10:00 am -13:00 pm (or set an appointment if needed)

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.

Textbook: Numerical Methods for Ordinary Differential Equations 3rd Edition by John C. Butcher.

Assessment:

- Major Exam: 30% (Week #8)
- In class participation: 20%
- Homework and Programming Assignment: 10%
- Final Exam: 40% (Comprehensive; Date and Location: To Be Announced)

Homework Policy:

Homework should be submitted by e-mail (pdf format) by the midnight of the due date. Each late submission will be penalized by 5%. Use the following subject line to submit your homework:

MATH 571 HOMEWORK [NUMBER] - [NAME - KFUPM STUDENT ID]

In case you do not use the above format, I might miss your submission and you might be penalized for late submission.

Attendance Policy:

Attendance is a University Requirement. If you miss 9 or more classes without an official excuse, you will be given a DN grade.

Topics	Number 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