

Numerical Methods

CSE 40713/60713

Syllabus

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WWW

This course heavily uses WebCT for readings, assignments and other tools. A summarized course web site may be found at:
<http://www.cse.nd.edu/courses/cse60713/www>

Goals

Welcome to Numerics! This course will focus on building skills to use numerical methods as a method to gain insight into systems or phenomena that may be mathematically modeled. Practical solutions are emphasized, including machine problems and lab time in addition to reading and written problems. Four widely applicable techniques will be covered: linear systems, interpolation, Fourier transforms, and ordinary differential equations.

Location and Time

Class meets for lecture at DeBartolo 242, MWF 11:45-12:35. Scheduled lab sessions occur on Fridays, 11:45, at Fitzpatrick 170.

Office Hours

Tuesday & Thursday 10am in Cushing 214, discussions may move to Engineering Lounge, Cushing 217.

Resources

Primary textbook: at Hammes Bookstore.

Title	Introduction to Scientific Computing
Author	Charles F. Van Loan
Publisher	Prentice Hall
Edition	2 nd
Year	2000
ISBN	0-13-949157-0

Recommended reading: on reserve at the Engineering Library.

Title	Applied Numerical Methods for Engineers
Author	Terence J. Akai
Publisher	Wiley
Edition	1 st
Year	1994
ISBN	0-471-57523-2

Course Format

This course will consist primarily of lectures and lab sessions. There will be four major homework assignments in addition to the lab work. Examinations will consist of a midterm and a final. The final grade will be composed of:

- 40% Homework
- 10% Lab problems
- 20% Midterm exam
- 30% Final exam

Calendar <i>A complete calendar with readings and assignments may be found on the WebCT page.</i>	
Fundamentals	8/23-9/1
Lab I: Matlab	8/25
Lab II: FLOPS & Profiling	9/1
Linear Systems	9/4-9/15
Lab III: Linear Systems	9/8
Interpolation	9/18-10/6
Lab IV: Interpolation	9/25
Midterm	10/11
FFT	10/23-10/27
Lab V: FFT	9/27
Nonlinear Systems	11/3-11/13
Lab VI: Extrema	11/10
Differential Equations	11/15-12/1
Lab VII: Initial Value Problems	11/24