

MA/CS/EGR 537 Numerical Analysis

Section 2 - Spring 2016

MWF 11:00-11:50 in CB 341

[Dr. Qiang Ye](#)

735 Patterson Office Tower, Phone: 257-4653, Email: qye3 "at" uky . edu

Office Hours: MWF 2-3 pm

Text

- Numerical Analysis by Walter Gautschi, Birkhäuser, 2011.
Ebook is available for free when on UKY network through springer link [SpringerLink](#).

Course Coverage

The course studies numerical algorithms and related theory for solving a variety of mathematical problems. The following topics will be covered:

- Computer arithmetic and condition number
- Polynomial and Spline Interpolation and Approximation
- Numerical Differentiation and Integration
- Finding Roots and Fixed-Points:
- Initial Value Problems for Ordinary Differential Equations:

Grading

The course grade will be based on homeworks (55%), a midterm exam (15%) and a final exam (30%).

Computing

Some assigned homework problems will require programming in MATLAB (or Octave). For those who have not used MATLAB before, this free book by Moler ([Introduction to MATLAB](#)) provides a good introduction. MATLAB also has an extensive on-line help facility (just type "help" or "help commandname" in MATLAB).

Demonstration Programs

The following are some MATLAB demonstration codes. You can run them online at [Octave online](#).

- 1. [Avoiding overflows.](#)
- 2. [Loss of significant digits.](#)
- 3. [Avoiding subtractions.](#)