

APMA 0160: Introduction to Scientific Computing

Spring Semester 2011

COURSE OUTLINE & GENERAL INFORMATION

Class Meetings: MWF 9:00–9:50am in Barus & Holley 157

Instructor: Dr. Alice C. Yew alice_yew@brown.edu

- 182 George St, room 310
- Office hours (times of availability without need for an appointment):
Mondays and Wednesdays 10:00–10:50am in Barus & Holley 158
Office hours are subject to change; changes will be announced in class and posted on the course webpage. Please make an appointment if you wish to meet with the instructor outside of office hours.
- WWW information page for this course:
<http://www.dam.brown.edu/people/alcyew/apma0160.html>

Purpose of Course: To introduce basic computational methods for solving mathematical problems that arise in science and engineering. The emphasis will be on the implementation of numerical algorithms in MATLAB.

Assessment: 100% by homework. Some of the assignments will be MATLAB programming exercises; others will be mathematical problem sets.

Provisional grading scale:

<i>Grade</i>	<i>Percentages to aim for</i>
A	89–100%
B	77–88%
C	65–76%

You will NOT be “graded on the curve”, i.e. I shall not determine your grade based on how well your performance compares with that of other students. However, grades *are* subject to *adjustment*, especially in borderline cases; adjustments take into account class participation and improvements in performance over the semester. Minimum percentages for grade cut-offs will be approximately as (and no higher than) in the tentative scale above.

Late homework assignments will NOT be accepted, except in cases of illness, emergency or other such crises; documentation verifying the excuse will be required, such as a note from your doctor. No credit will be given for late work unless you have a legitimate excuse together with verification.

Course Content

MATLAB basics
Recursive formulas and iteration
Scalar nonlinear equations
Linear systems
Approximation of functions and data
Numerical differentiation and integration
Ordinary differential equations
Boundary value problems and partial differential equations

Textbook: *Scientific Computing with MATLAB and OCTAVE* by A. Quarteroni, F. Saleri and P. Gervasio [3rd edition], published by Springer