Text

Prerequisites:
Introduction to Linear Algebra (MA244) and Calculus, and proficiency in basic programming in MATLAB, C or Fortran.

Description:
This course offers an introduction to numerical methods. We will develop and study a number of methods for approximately solving problems on a computer that cannot otherwise be solved. Topics include methods for solving nonlinear equations, interpolation, numerical integration and differentiation, FFT and signal processing, DCT and, audio and image compression. We will carefully study convergence and stability of these methods whenever relevant. Implementation of these methods on computers will also be addressed.

Sections of Text Covered:
Chapter 0, Sections 0.1–0.3
Chapter 1, Sections 1.1–1.5
Chapter 3, Sections 3.1–3.5
Chapter 4, Sections 4.1–4.2
Chapter 5, Sections 5.1–5.2, 5.5
Chapter 10, Sections 10.1–10.3
Chapter 11, Sections 11.1–11.4

Regular Assignments
These assignments will involve problems of an analytical nature and will be given every week, to be turned in for grading.

Programming Project:
There will be a programming project. You may use any language and any platform for writing your programs. The programming assignments will require some kind of written report for any credit to be given. You don’t have to write up a formal document, but you do have to state the problem to be solved, describe how the program solves it, and summarize the results obtained, in addition to answering any questions that were posed. Your write-ups must conform to the following template; the order of material is NOT optional:

- Description of the problem, method of solution and discussion (if any needed) of how the program implements the algorithm;
- Summary table of results and associated comments;
- All Code listings (Appendix I) and all Raw output (Appendix II).

I want to be able to grade your work entirely from the write-up, without going to the raw code and data, unless there is a problem that needs to be resolved. So your first few pages should contain all the information I need to do this.
Make-ups
No accommodations will be made for a missed assignment. If you miss a test due to a documented illness, family emergency or other extreme circumstance, you may be eligible for a makeup test provided I receive a written excuse within a reasonable amount of time.

Grading System
Midterm [March 9] =35%
Assignments (Regular & Programming) =25+5=30%
Final Exam [3:00p.m.-5:30p.m, April 25]=35%

Attendance:
Attendance at and participation in all lectures is required. Experience shows that students who do not regularly attend class tend not to get good grades. Tardiness to class is very disruptive of the classroom environment and should be avoided.

Complaint Procedures: If you have difficulties or complaints related to this course, your first action usually should be to discuss them with me. If such a discussion would be uncomfortable for you or fails to resolve your difficulties, you should contact Professor Jia Li, Chair of the Department of Mathematics. Professor Li’s office is SC258A. His telephone number is 824-6470. If you still are unsatisfied, you should discuss the matter with E. Waddel, Associate Dean of the College of Science. The Associate Dean’s office and telephone number are MSB C206 and 824-6605.

Disability Statement:
If you have a disability that might require special materials, services, or assistance, please discuss this with the instructor at the beginning of the semester. It is the responsibility of the student to notify the instructor with his or her case. It is also the responsibility of the student to contact the counselor at the beginning of the semester. You may contact the Student Development Services in UC 113 for further assistance (i.e. phone: 824-6203)

UAlert Emergency Notification System:
UAHuntsville has implemented the UAlert emergency notification system. UAlert allows you to receive time-sensitive emergency messages in the form of e-mail, voice mail, and text messages.

Everyone who has a UAHuntsville e-mail address will receive emergency alerts to their campus e-mail address. In order to also receive text and voice message alerts, you are asked to provide up-to-date phone contact information. Participation in UAlert text and voice messaging is optional, but enrollment is strongly encouraged. You can’t be reached through UAlert unless you participate. The information you supply is considered confidential and will not be shared or used for purposes other than emergency notification.

To review your UAlert account, add or update phone and alternate e-mail addresses, and set the priority for your contact methods, please visit the UAlert web site: http://ualert.uah.edu.

Course web-site: http://mullai.uah.edu/~ravindra