Announcements | Syllabus

Course Syllabus

Meeting Location and Times: 347 Whitehead Classroom Building, MWF 11-11:50am

Instructor Information:
Dr. Jeffrey O. Oval
761 Patterson Office Tower
(334) 257-5792

Office Hours: MWF 1-2pm, or by appointment

Textbooks:
- Numerical Analysis: Mathematics of Scientific Computing
- The Sally Series: Pure and Applied Undergraduate Texts, Vol. 9

Although the book contains "undergraduate" on the cover, it is appropriate for a graduate text. You will not need the book for at least the first week of class, so shop around to get a good deal. There are a variety of editions and variants of this book—be mindful to ensure you have the correct edition for the course.

Course Notes:
- I will often base my lectures on these PDF notes, and where I deviate from the presentation in book, it will be in favor of presentation in the notes. The notes also contain many detailed examples. The notes may be modified a bit during the term (this will be evident by the date on the front of the PDF), as I add new material, or determine better ways of conveying "old" material.

Software: Some assigned problems will require (most of) programming. Although I do not care which programming language(s) you use, if you want any debugging help from me, I suggest that you use a package like Python or Octave.

Topics: This course, together with MA CS 620, form the preliminary exam sequence (in the mathematics department) for Numerical Analysis. The topics will be definitely discussed in this course (and are "fair game" for the preliminary exam) will be drawn from Chapters 1-3 and 6-8 of the required text, and include:

1. Introductory Material: Calculus review, convergence and convergence rates for sequences; floating-point (computer) arithmetic
2. Polynomial and Spline Interpolation and Approximation: Basic polynomial results, polynomial interpolation, Hermite and quintic splines.
3. Linear Equations and Linear Algebra: Direct methods, numerical methods, matrix factorization.
4. Numerical Integration and Quadrature: finite difference approximations of derivatives; Professor's section (simple geometric integrals); basic numerical integrals (quadrature); Gaussian quadrature; various quadrature improvements (change-of-variable, Riemann integration, etc.)

Grading: The course grade will be based on seven assignments, one (in-class) midterm, and one (in-class) comprehensive final exam. Your course grade will be assigned based on the percentage earned of 100 possible points: 80% = 80% for assignments, 160 for the midterm, and 200 for the final. Only one exam is in class and the exam will be the last exam of the final exam.

Assignments: Each assignment will be due at the beginning of class on the day the letter-grade is given. Your assignments should be clearly written, and organized in a way that shows your thought process. If you are missing any of your assignments, you will receive lower grades. Problems for a given assignment may be changed, and the due date may be extended by at least two class days beyond the due date (which point the problem set is complete), but you are encouraged to be working on their problems as they are posted.

Exams: The exam will be given on the letter-grade is given. Your assignments should be clearly written, and organized in a way that shows your thought process. If you are missing any of your assignments, you will receive lower grades. Problems for a given assignment may be changed, and the due date may be extended by at least two class days beyond the due date (which point the problem set is complete), but you are encouraged to be working on their problems as they are posted.

Important Dates: Some key dates from the academic calendar are:

- January 11 - Wednesday - First day of classes
- January 16 - Monday - Martin Luther King Birthday - Academic Holiday
- February 1 - Wednesday - Last day to drop a course without it appearing on the student's transcript, or to change grading option
- March 15 - Monday - Spring Break - Academic Holiday
- April 30 - Monday - Last day to withdraw from the university or rescind course load. Students can withdraw or rescind course load after this date only for urgent non-academic reasons.
- May 12 - Monday - Last day of classes
- May 14 - Monday - Final Examinations

Academic Integrity: All violations of academic integrity will be taken seriously, and dealt with according to university regulations. University policies related to academic violations, in various forms, and in varying degrees of detail, can be found by following the links given here and here.

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