M348
SCIENTIFIC COMPUTATION IN NUMERICAL ANALYSIS
UNIQUE #55775
FALL 2014

Instructor: Brittany D. Froese
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Office: RLM 11.164
Office Hours: MF 11:00am - 1:00pm or by appointment

Lectures: MWF, 9:00am - 10:00am, BUR 220

Course webpage: www.ma.utexas.edu/users/bfroese/M348_Fall2014

Required text: Burden and Faires, *Numerical Analysis* (Ninth Edition)

Prerequisite: CS303E or CS307, and M341 or M340L with a grade of at least C-.

Course description. M348 is an introduction to mathematical properties of numerical methods and their applications in computational science and engineering. Topics include the use of numerical methods for solution of nonlinear algebraic equations, interpolation, numerical integration, initial value problems for ordinary differential equations, and systems of linear equations.

Grading. Your grade will be computed according to the following breakdown:

Homework: 20%
Two midterm exams: 40%
Final exam: 40%

Your final score will be rounded to the nearest integer and assigned a letter grade using a scheme at least as generous as the following:
A: 92-100, A-: 90-91, B+: 88-89, B: 82-87, B-: 80-81,
C+: 77-79, C: 63-76, C-: 60-62, D+: 58-59, D: 53-57, D-: 51-52, F: $\leq$50.

Homework. Assignments will be posted on the course webpage. Assignments must be handed in at the beginning of class on the specified due date, which will typically be a Wednesday. A few of the problems will be selected for grading, and part of the mark will be for completeness. Problems will be graded for correctness, completeness, and clarity of the solutions. Solutions should be written out with sufficient detail, clarity, and legibility that they can be easily understand by an average student in this class. No late assignments will be accepted.

Homework assignments will count for 20% of your final grade. There will be no opportunity to make up late assignments. However, the lowest score from this category will be discarded.

Programming. Some of the homework assignments will involve computer programming. When turning in these assignments, you should include your commented code and all output. Code used in class and provided for homework assignments will be in Matlab. You are free to submit assignments in C, C++, or Python if you prefer; however, it will be your responsibility to adapt any provided code to your chosen language. You can obtain a computer account in the undergraduate computer lab in RLM 7.122.

Exams. There will be two midterm exams held during the class time. These will take place on Wednesday October 8 and and Wednesday November 12. Each midterm will count for 20% of your final grade. Missed midterms cannot be made up. However, your lowest midterm score will be replaced with your final exam score if this has the effect of raising your final grade.

The final exam will be held on Friday, December 12, 9:00am - 12:00pm. This exam will be cumulative and will count for 40% of your final grade.

A valid photo ID must be available to present upon request at all exams. For the exams, you are permitted to bring a non-programmable calculator and a single 8.5"x11" double-sided sheet of notes. These notes must be written in your own handwriting; no typing or photocopying is permitted. No other notes, books, phones, or electronic devices are permitted during exams.

E-mail guidelines. When e-mailing the instructor, please include the class name "M348" in the subject line and sign the e-mail with your full name. This will make it easier for us to provide a prompt and helpful response.

If you need to make an appointment with me outside of my regular office hours, please suggest several time periods when you will be available during the following 2-3 days.

Special needs. Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities (SSD) at (512) 471-6259 (voice) or 1-866-329-3986 (video phone).

Academic dishonesty. Each student in this course is expected to abide by the University of Texas Honor Code. All work you submit in this course, whether homework or exams, must be your own. Working together on assignments is allowed and encouraged. However, the assignment you turn in must be your own work; simply copying someone else's solutions is not acceptable. Instances of cheating will be dealt with severely.

Religious holy days. By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, I will give you an opportunity to complete the missed work within a reasonable time after the absence.

Deadlines for dropping a course.

- September 2: Last day of the official add/drop period.
- September 12: Last day to drop a class for a possible refund.
- November 4: Last day an undergraduate student may, with the dean's approval, drop a class except for urgent and substantiated, nonacademic reasons.

Tentative course schedule. Tentatively, we will work through the textbook according to the following schedule. However, as the semester progresses, this timeline may be altered to improve the learning experience.

Week of	**Monday**	**Wednesday**	**Friday**
Aug. 25	no class	1.2	1.2
Sept. 1	no class	1.3	2.1
Sept. 8	2.2	2.3	2.3
Sept. 15	2.4	2.4	3.1
Sept. 22	3.1	3.3	3.4
Sept. 29	3.5	3.5	4.1
Oct. 6	review	**Midterm #1**	4.1
Oct. 13	4.2	4.3	4.4
Oct. 20	4.4	4.6	4.7
Oct. 27	5.1	5.2	5.3
Nov. 3	5.4	5.5	5.6
Nov. 10	review	**Midterm #2**	5.9
Nov. 17	5.11	6.1	6.2
Nov. 24	6.3	6.4	no class
Dec. 1	6.5	extra/review	review
Final exam: December 12, 9:00am - 12:00pm			