

**CSE 4345/5315 – Computational Methods in Computer Engineering
Fall 2013**

Instructor: Darin Brezeale, ERB 648
Office Hours: Tuesdays and Thursdays, 11am–12pm (or anytime my door is open)
Contact: darin.brezeale@uta.edu (best way to contact me)
I don't have a phone in my office, but in case of an emergency you can call the CSE department at 817-272-3785.
Website: <http://omega.uta.edu/~darin>
Section: 001: MoWe, 1:00–2:20, WH 210

Course Description: Introduction to scientific computing, in particular how to use a computer to calculate solutions to systems of linear equations, least squares, eigenvalues, nonlinear equations, optimization, interpolation, and random numbers. Prerequisite: CSE 2320, IE 3301, MATH 3330.

Learning Outcomes: At the end of this course you should be able to

1. understand pros and cons of various standard algorithms for calculating solutions to computational problems
2. identify sources of errors in computations
3. understand concepts of sensitivity, conditioning, and stability
4. understand the differences between answers produced in an ideal world and what we can really produce

Textbook: Scientific Computing: An Introductory Survey, 2nd Edition, Michael T. Heath

Attendance Policy: Attendance is not required except for exams. However, you should not expect me to catch you up if you choose not to come to class.

Homework Policy: I'm a strong believer that the best way to learn math is by doing, so you should expect plenty of homework. Calculators will not be allowed on exams, so you probably should not become dependent on them when doing your homework.

Grading Policy: Grades are based on the following:

Homework	25% (collected up through Final Review Week)
Exam 1	25%
Exam 2	25%
Final Exam	25%

No make-up exams will be given except for emergencies (in the instructor's opinion). Poor planning on your part won't be considered an emergency. I never give extra credit work and final grades are based on the standard ranges of A: 90–100, B: 80–89, . . . , F: 0–59. **CSE 5315 students: There may be additional requirements on the homeworks or tests (or both) for you.**

Important Dates:

Monday, August 26	first day of class
Monday, September 2	no class, Labor Day
Wednesday, September 25	exam 1
Monday, October 28	exam 2
see UTA schedule	final exam

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit; there are exits located east and west of this room. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/ses/fao>).

American with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Electronic Communication Policy: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. **I send out a lot of emails, so check your email regularly.**

Academic Integrity: At UT Arlington, academic dishonesty is completely unacceptable and will not be tolerated in any form, including (but not limited to) cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another

person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts (UT System Regents Rule 50101, 2.2). Suspected violations of academic integrity standards will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the students suspension or expulsion from the University. **Homework assignments are not group projects; each student is expected to write his or her own programs individually.**

Student Support Services UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Student Feedback Survey At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each students feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlingtons effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs> .

Final Review Week A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Course Schedule A tentative course schedule can be found on the course website. Keep in mind that the dates will likely change as the semester progresses.

References

Datta, Biswa Nath: Numerical Linear Algebra and Applications. 2nd edition. Philadelphia, PA: Society for Industrial and Applied Mathematics, 2010

Higham, Nicholas J.: Accuracy and Stability of Numerical Algorithms. 2nd edition. Philadelphia, PA: Society for Industrial and Applied Mathematics, 2002

O'Leary, Dianne P.: Scientific Computing with Case Studies. Philadelphia, PA: Society for Industrial and Applied Mathematics, 2009

Trefethen, Lloyd N./Bau, III, David: Applied Numerical Linear Algebra. Philadelphia, PA: Society for Industrial and Applied Mathematics, 1997