CSE 5311: Design and Analysis of Algorithms

Spring 2016

Instructor(s): Gautam Das

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Office Hours: Tue 2:30-3:30 PM and Thu 2:30-3:30 PM

Time and Place of Class Meetings: TuTh 3:30PM - 4:50PM ERB 103

Description of Course Content: Review of Asymptotic Analysis and Growth of Functions; and Trees and Heap, Recurrences and Sorting Algorithms, Graph Algorithms and Maximum Flow Networks, Greedy Algorithms and Dynamic Programming, and Amortized Analysis, Algorithms for String Matching and Computational Geometry, NP Completeness and Approximation Algorithms, (Time Permitting) Special Topics: Applications of Algorithms.

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

- be familiar with the algorithms and algorithmic techniques covered,
- be able to argue correctness and analyze the running time of a given algorithm,
- be able to design new algorithms for new situations, using as building blocks the algorithms and
- techniques learned,
- be able to prove a problem is NP-complete using reduction.

Required Textbooks and Other Course Materials: Introduction to Algorithms by Cormen, Leiserson, Rivest, Stein., 3rd ed., MIT Press, 2009.

Descriptions of major assignments and examinations: There will be 4 in-class quizzes and 2 noncomprehensive examples. For additional details, see the grading policy below.

Attendance: At The University of Texas at Arlington, taking attendance is not required. Rather, each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I have decided that attendance at class meetings is not required but strongly encouraged.

Grading: Your grade will be based on the following weights:

- Quizzes: 25%
    - There will be 4 short quizzes during the course to test your understanding of the concepts taught.
    - They will generally be allotted 15-20 minutes at the end of the class period.
    - They will be announced at least a week in advance.

- Midterm: 30%
    - There will one midterm exam during the semester covering first half of the course.
    - There will be no makeup exams except under extenuating circumstances!
- Final: 30%
    - There will one non-comprehensive final exam during the semester covering second half of the course.
    - There will be no makeup exams except under extenuating circumstances!
- Project: 15%
    - Students will be involved in a programming project.

Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels; see "Student Support Services," below.

Make-up Exams: Make-ups for graded activities may be arranged if your absence is caused by illness or work/personal emergency. A written explanation (including supporting documentation) must be submitted to the Instructor. If the explanation is acceptable, an alternative to the graded activity will be arranged. Make-up arrangements must be arranged prior to the scheduled due date.

Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 4-5 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

Grade Grievances: After the grading of quizzes/exams, the student will have one week to raise any grading issues to the GTA. If the issue is not resolved, then the student will have an additional week to raise the issue to the Instructor. The decision by the Instructor is final. Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog. for graduate courses, see http://catalog.uta.edu/academicregulations/grades/#graduatetext.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through selfservice 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://wweb.uta.edu/aao/fao/).

Americans 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. Title IX: The University of Texas at Arlington is committed to upholding U.S. Federal Law "Title IX" such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be

denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

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Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

> *I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*
> *I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents' Rule 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Electronic Communication: 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. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online 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 student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's 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.

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. For the information, please refer to

information at http://www.uta.edu/campus-ops/ehs/fire/Evac_Maps_All/Evac_SH/Evac_SH_125.pdf. 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 individuals with disabilities.

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.

Writing Center: The Writing Center, 411 Central Library, offers individual 40 minute sessions to review assignments, Quick Hits (5-10 minute quick answers to questions), and workshops on grammar and specific writing projects. Visit https://uta.mywconline.com/ to register and make appointments. For hours, information about the writing workshops we offer, scheduling a classroom visit, and descriptions of the services we offer undergraduates, graduate students, and faculty members, please visit our website at www.uta.edu/owl/.

Course Schedule: For an up-to-date schedule please visit
http://dbxlab.uta.edu/courses/spring16AlgoFiles/CSE5311_Schedule_Spring16.pdf