Course Syllabus

Course Information

CS 6363.003

Design and Analysis of Computer Algorithms

Spring 2023

Tuesday, Thursday 1:00pm–2:15pm

ECSS 2.203

Website: https://personal.utdallas.edu/~kyle.fox/courses/cs6363.003.23s/
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Professor Contact Information

Instructor: Kyle Fox
Phone: (972) 883-4168
Email: kyle.fox@utdallas.edu
Office: ECSS 4.224
(Tentative) Office Hours: Tuesday 3:00pm–4:00pm and Thursday 10:00am–11:00am via MS Teams (additional and in-person office hours available upon request)
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TA Contact Information

TA Name: Alakh Aggarwal
Email: Alakh.Aggarwal@UTDallas.edu
Office: ECSS 3.618
Office Hours: Wednesday 11:00am–2:00pm via MS Teams
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Course Pre-requisites, Co-requisites, and/or Other Restrictions

CS 5333 and CS 5343. This section of the course is recommended for any students planning to take the CS 6363 Ph.D. QE.
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Course Description

(From CourseBook. Specific topics may be added or removed to better fit Student Learning Objectives listed below.) The study of efficient algorithms for

various computational problems. Algorithm design techniques. Sorting, manipulation of data structures, graphs, matrix multiplication, and pattern matching. Complexity of algorithms, lower bounds, NP completeness.

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Student Learning Objectives/Outcomes

Students will have ability to use asymptotic notations, use and solve recurrences, and perform algorithm analysis.

Students will have ability to understand, design, analyze, and prove correctness of algorithms based on divide-and-conquer techniques

Students will have ability to understand, design, analyze, and prove correctness of algorithms based on greedy techniques

Students will have ability to understand, design, analyze, and prove correctness of algorithms based on dynamic programming techniques

Students will have ability to understand, design, analyze, and prove correctness of graph algorithms including those for network flows

Students will have ability to understand and prove NP-completeness of problems

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Required Textbooks and Materials

Jeff Erickson: **Algorithms**. Available at
http://jeffe.cs.illinois.edu/teaching/algorithms/.

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Suggested Course Materials

Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein: Introduction to Algorithms, 3rd Edition. MIT Press 2009 (official required book for all CS 6363 sections)

Links to additional lecture notes will be provided on the course website.

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Assignments & Academic Calendar

Topics and deadlines will be added to the course website as the semester progresses.

Tentative Exam Schedule

Midterm 1:   Thursday, March 9th
Midterm 2:   Thursday, April 20th
Final Exam: Thursday, May 11th
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Course & Grading Policies

Four or five homework sets will be assigned during the semester. There will be two midterm exams and a cumulative final exam.

Each homework assignment will be given equal weight. Grades are determined with a weighted sum of homework worth 30%, each midterm exam worth 20%, and the final exam worth 30%.

Pairs of students may work together and turn in homework as a single submission. Individual submissions are fine as well. Homework should be turned in via eLearning. eLearning is not well designed for group submission, so each group should have exactly one of its members turn in the assignment. The grade for one submission will be given to all group members.

It is expected that students be able to solve homework problems using only course material and the work within their homework group. If necessary, students are permitted to use any outside source or person as long as they **cite the source** and **rewrite the solution in their own words**. They may also work with students outside their group, but again, they must cite all collaboration with other students in the class outside their group. Properly cited and rewritten outside material is still worth full credit. Material not cited or not rewritten in students' own words will be considered an act of academic dishonesty and suspected incidents will be reported to the Office of Community Standards and Conduct. Students do not need to cite anything from this course or prerequisite courses, but when in doubt, they should cite anyway just to be safe.

Students must request extensions via email for any late work they plan to submit. Extensions of up to 24 hours for all assignments will be automatically approved, but the student must still make an explicit request. Longer extensions may be approved at the instructor's discretion based on the circumstances involved.

Exams are closed book, and no other sources, collaboration, or cheat sheets are allowed. If you know about a conflict with the scheduled exam dates, please inform Kyle at least one week in advance to set a conflict exam time. Makeup exams for unexpected conflicts will be scheduled if you have a documented medical excuse. If you have or believe you may have a disability that requires a reasonable accommodation in the structure or administration of an exam, please consult with and get written documentation from the Office of Student AccessAbility (OSA) at least one week in advance of the exam.

Final grades for each student are determined either by their scores passing predetermined percentage thresholds or their performance relative to the class average, whichever results in a higher grade. In other words, if everybody performs well, then everybody gets a good grade. Please talk to Kyle about grades before considering dropping the course.

There may be a small amount of extra credit available through additional work during assignments. Outside sources cannot be used for extra credit work. The existence of extra credit points will not affect the percentage cutoffs for students' final grades.

Requests for a regrade must be made within one week of the homework assignment or exam being returned. The problem in question will be completely regraded, so the score may actually go down.

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Class Attendance and Participation

Regular class attendance is expected, and students who fail to attend class regularly are inviting scholastic difficulty. Your attendance helps Kyle to gauge how well the lecture is going, and it gives you an opportunity to ask questions as the lecture is being delivered.

However, we understand you may not be able to attend all classes for any number of reasons. Kyle will upload a video of each lecture to be made available via MS Teams. If you unable to attend class in person or simply want to review lectures you've attended, please watch these videos. **You do not need to ask permission or offer an explanation for missing class.**

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Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an

approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct.](#)

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

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Comet Creed
This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

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Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students.

Please see http://go.utdallas.edu/academic-support-resources.

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UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.