

Course Syllabus

Course Information

CS 6363-005: **Design and Analysis of Computer Algorithms**, Spring 2019

Tue & Thur 10:00am–11:15am, ECSS 2.410

Website: <https://utdallas.edu/~kyle.fox/courses/cs6363.005.19s/>

Instructor Contact Information

Kyle Fox, Assistant Professor

Phone: (972) 883-4168

Office: ECSS 4.224

Office Hours: Mondays 2:00pm–3:00pm, Thursdays 2:00pm–3:00pm (tentative). Additional office hours by request.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

CS 5333 and CS 5343

Course Description

According to CourseBook: 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.

Specifics are subject to change at the instructor's discretion. Focus will be on preparing students to meet the Student Learning Objectives/Outcomes listed below.

This section is meant for students intending to take the Algorithms Ph.D. Qualifying Exam.

Student Learning Objectives/Outcomes

- Ability to use asymptotic notations, use and solve recurrences, and perform algorithm analysis
 - Ability to understand, design, analyze, and prove correctness of algorithms based on Divide-and-Conquer techniques
 - Ability to understand, design, analyze, and prove correctness of algorithms based on Greedy techniques
 - Ability to understand, design, analyze, and prove correctness of algorithms based on Dynamic Programming techniques
 - Ability to understand, design, analyze and prove correctness of graph algorithms including those for network flows
 - Ability to understand and prove NP-Completeness of problems
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Required Textbooks and Materials

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

Jeff Erickson: **Algorithms**. Available at <http://jeffe.cs.illinois.edu/teaching/algorithms/>. (main source for lecture material and homework problems)

Assignments & Academic Calendar

Homework will be assigned roughly biweekly. There should be five homework assignments released. There will be two midterm exams and a cumulative final exam.

Tentative Exam Schedule

Midterm 1: Tuesday, February 26th from 10:00am to 11:15am in ECSS 2.410

Midterm 2: Tuesday, April 16th from 10:00am to 11:15am in ECSS 2.410

Final Exam: Thursday, May 9th from 11:00am to 1:45pm in ECSS 2.410

Grading Policy

Each student's lowest homework assignment score is dropped, but each assignment is otherwise given equal weight. Afterward, grades are determined by a weighted sum of the following three items.

Homework: 30%

Midterm Exams: 20% each

Final Exam: 30%

Grades are determined by each student's performance relative to the class average. However, there is no fixed curve. If everybody performs well, then everybody can get top grades. Please talk to the instructor about grades before considering dropping the course.

Course & Instructor Policies

Details on remaining course policies for assignments and writing of solutions can be found on the course website <https://utdallas.edu/~kjf170230/preview/courses/cs6363.005.19s/>. A few key points can be found below.

Doing homework is vital for learning algorithm design and succeeding in the course. Therefore, all late homework assignments are automatically given a 48 hour grace period, during which the assignment may still be turned in **with no penalty**. The instructor reserves the right to pester students via email when their assignments are late. After the grace period, no late homework will be accepted.

Homework should be turned in individually via eLearning. However, students are highly encouraged to work together, preferably in small groups, to complete assignments. Students working together must cite each other as collaborators. See the next paragraph.

You are expected to solve problems using only course material and work within small groups of students. If necessary though, you are permitted to use any outside source or person as long as you **cite the source and rewrite the solution in your own words**. You must **cite all collaboration with other students in the class** as well. Properly cited and rewritten outside material is still worth full credit. Material not cited or not rewritten in your words will be considered an act of academic dishonesty and suspected incidents will be reported to the Office of Community Standards and Conduct.

There may be a small amount of extra credit available. It will not affect the percentage cutoffs for students' grades, so it can only help you.

Requests for regrades must be made within one week of the homework assignment or exam being returned. The problem in question will be completely regraded, so your score may actually go down. Please send regrade requests for exams to the instructor and requests for homework assignments to the TA.

If you know about a conflict with the scheduled exam dates, please inform the instructor 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 feel 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.

Exams are closed book, and no other sources, collaboration, or cheat sheets are allowed.

It is the Computer Science Department's policy that absence in three consecutive lectures will result in the course grade being lowered by one letter and absence in four consecutive lectures will automatically result in a failing grade (F) in the course.

UT Dallas Syllabus Policies and Procedures

The University maintains a standard policies and procedures segment for course syllabi. Please refer to <http://go.utdallas.edu/syllabus-policies> for this segment.

These descriptions and timelines are subject to change at the discretion of the Professor.