

Course Syllabus

Course Information

Course Prefix, Number, Section: CS 4349.006
Course Title: Advanced Algorithm Design and Analysis
Term: Fall 2023

Note: *The descriptions and timelines below are subject to change at the discretion of the instructor. We will notify students as soon as there is an update. The instruction modality for this course is **Traditional Classroom**. That means, all the lectures and exams will be held in person. There will be no online sessions or take-home exams.*

Professor Contact Information

Instructor: Serdar Erbatur
Email: sxe190003@utdallas.edu
Office: ECSS 3.603
Office Hours: Monday: 1PM-2PM in office
Tuesday 2:30PM - 3:30PM in office
Or by appointment.

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

CS 3305 with a grade of C or better and CS/SE/CE/TE 3345

Course Description

Asymptotic analysis, recurrences, and graph algorithms. Algorithm design techniques such as greedy method, dynamic programming and divide-and-conquer. Issues from computational complexity. A theoretical approach is followed in the course.

Student Learning Objectives/Outcomes

- Ability to use asymptotic notations, solve recurrences and perform algorithm analysis.
- Ability to design, analyze and prove correctness of algorithms based on divide-and-conquer techniques.
- Ability to design, analyze and prove correctness of algorithms based on dynamic programming techniques.
- Ability to design, analyze and prove correctness of algorithms based on greedy method.
- Ability to design, analyze and prove correctness of graph algorithms.

Required Textbooks and Materials

Introduction to Algorithms, by Cormen, Leiserson, Rivest and Stein, 4th Edition, McGraw Hill

Additional course materials (lecture notes, problem sets) will be posted on eLearning.

Assignments & Academic Calendar

There will be 4 exams in this course. The exams will be open books and open notes. However, you will not be allowed to use any electronic devices. You will be given 70 minutes for each exam.

Important: All exams will be held at UTD Testing Center. I booked the exam room in testing center for the days and time periods below. You will be required to register for the exams at least 48 hours prior to the exam time.

Basic rules:

- If you spend more than 75 minutes, you will be penalized highly; deductions starting from %10 will be applied to your grade.
- If you return the exam paper after the time window is over, you will receive a zero.
- Register for your exams at the testing center homepage:

<https://ets.utdallas.edu/testing-center>

	Date	Location
Exam 1	09/14/2023 1PM – 4PM	UTD Testing center
Exam 2	10/19/2023 1PM – 4PM	UTD Testing center
Exam 3	11/16/2023 1PM – 4PM	UTD Testing center
Exam 4	12/07/2023 8:30AM – 9PM	UTD Testing center

There will be no graded homework assignments in this course. Instead, you will be provided problem sets to study. Please note that these problem sets will **not** be part of your grade. They are offered to help you improve your understanding, sharpen your problem-solving skills, and help you prepare for in-class exams.

Grading Policy

How will your average score be calculated?

This will be done in two steps:

1. I will calculate the average of your **first three exam scores**.
2. If your Exam 4 score
 - a. **is higher than the average of your first three exam scores**, then I will count it while calculating your final average score.
 - b. **is lower than the average of your first three exam scores**, then I will discard it and your final average score will be based on your first three exam scores.

Note that I will count your Exam 4 score if it helps improve your overall average.

Final letter grades will be calculated using the following scheme.

96 - 100:	A+
92 – less than 96:	A
88 – less than 92:	A-
84 – less than 88:	B+
80 – less than 84:	B
76 – less than 80:	B-
72 – less than 76:	C+
69 – less than 72:	C
66 – less than 69:	C-
63 – less than 66:	D+
60 – less than 63:	D
57 – less than 60:	D-
0 – less than 57:	F

Course & Instructor Policies

Any further detail will be announced on eLearning. Please read the following carefully.

1. **To succeed in this course, you must attend the lectures.** It is unlikely to be successful in the exams without being present in class and interacting with me.
2. To be sure that you will find me in my office, you can email me to set up an appointment as well.
3. There will be no review sessions in class before the exams. It is your task to review the class material frequently and come to my office for clarifications.
4. If you want to discuss your exam grades with me, you will need to come to my office. I will not reply to emails requesting feedback for exam performance, explanations why some points are lost, or updates in the exam scores.

5. If a student is unable to take an exam on a scheduled date, they should inform me in advance. Makeup exams will be scheduled only if the student has **a valid medical excuse provided in a duly signed letter.**
6. **Important:** When studying the exercises posted on eLearning, you must avoid referring to internet resources. There is no need to do that since the exercises are not part of your grade. Please use the lecture notes and your textbook to solve the exercises. Also, you can discuss with me. After I post the solutions, you must thoroughly review the solutions and compare them with yours. This will help you understand the course topics better.
7. Please do not ask for extra credit for solving the study exercises. They will not be graded and are not part of your grade. Emails regarding this issue will be ignored.
8. The course teaching assistant will hold office hours and provide you clarifications if you need. You may want to check if your TA prefers to meet via MS Teams on in their office.
9. To review grades of exams, a request must be made **within one week** after the grades are posted. After that, all requests will be ignored.
10. **Please do not send me emails about raising your final grades at the end of semester. Your final grade will be based on your performance.**
11. If you want to drop the class, you must make sure to take Drop or Withdrawal actions via official channels of the university. Otherwise, you may receive an **F** or **NF** for the course.

Please see <http://go.utdallas.edu/syllabus-policies> for policies of the university. We follow the UTD policies while running our courses.

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.”
