

Course Syllabus

CS 4349.001 Advanced Data Structures and Algorithms, Spring 2018
TR 2:30-3:45am, ECSS 2.311

Professor's Contact Information

Sergey Bereg, 972-883-2364, ECSS 4.227, besp@utdallas.edu

Office hours: Tue,Thur 1:30-2:30pm. Other times available, email for an appointment.

Pre-requisites, Co-requisites, & other restrictions

CS 3345 or equivalent (Data structures and algorithms): Analysis of algorithms. Stacks, queues, and trees, including B-trees. Heaps, hashing, and advanced sorting techniques. Disjoint sets and graphs.

Course Description

Algorithm design techniques: divide-and-conquer, dynamic programming, greedy algorithms. Sorting and searching. Graph algorithms. Computational complexity, lower bounds, NP-Completeness. Proofs of correctness and running time analysis.

Learning Objectives

Study efficient algorithms for a number of fundamental problems, learn techniques for designing algorithms, prove correctness and analyze running times.

1. Ability to understand asymptotic notations, recurrences, algorithm analysis
2. Ability to understand divide and conquer algorithms
3. Ability to understand greedy algorithms
4. Ability to understand dynamic programming algorithms
5. Ability to understand graph algorithms, flow networks

Textbook

Introduction to Algorithms, 3rd Edition, by T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein.

Assignments & Academic Calendar

6 assignments, 2 tests (in class on March 1 and April 26).

Grading Policy

The final grade is the minimum of (i) the average of tests, and (ii) the average of homeworks.

A+: 92%, A: 90%, A-: 85%, B+: 81%, B: 77%, B-: 73%, C+: 68%, C: 64%, C-: 60%, D+: 56%, D: 53%, D-: 50%.

Course & Instructor Policies

- CS department policy: one grade reduction for missing 3 classes (without prior permission from instructor), and a grade of F for missing 4 classes without proper excuse.
- Assignments are due in class on the specified date. Turn in what is completed by the deadline for partial credit. No late submissions will be accepted. All submissions must be your own work. Solutions copied from the internet, instructor's manual, etc. will be given zero credit.
- Regular class attendance and participation is expected and is the responsibility of each individual. There is a strong correlation between regular class attendance and good performance. If a student should elect not to attend a class, (s)he is responsible for any handouts, announcements, reading material and contents of missed lectures.
- See also UTD's policies at <http://go.utdallas.edu/syllabus-policies>