

Analysis of Algorithms

CPSC 629, Syllabus

Instructor: Dr. Andreas Klappenecker

Office: 509B Harvey R. Bright Building

Office hours: MT 3:30pm–4:30pm

Course Goals. The course CPSC 629 gives an introduction to the analysis of algorithms. We study several fundamental algorithms and basic design principles of algorithms. We introduce some mathematical methods and tools that are useful in the analysis of algorithms. A brief exposition of complexity theory concludes the course.

The course is a sequel to the undergraduate course CPSC 311.

Grading Policy. Midterm exam 20%, final exam 25%, project 20%, assignments 30%, culture 5%. The grades will be assigned on an absolute scale: A=90-100, B=80-89, C=70-79, D=60-69, F=0-59. I might slightly curve the results if the grades are lower than expected.

The midterm and the final exam consist of written in-class exams. We will have about 6-7 paper and pencil homeworks. You have to submit 4 written summaries of talks to satisfy your culture requirements. A new part of this course is a project that will be done in teams of 2 persons. The project topics and the presentation time will be randomly assigned. You will explore applications that relate to the course contents.

Dishonesty. Cheating will not be tolerated – see the Aggie code of honor. Cheating and plagiarism will be rewarded with the grade F*.

Required Textbook

- Cormen, Leiserson, Rivest, Stein: Introduction to Algorithms, 2nd edition, MIT Press, 2001
This book gives a nice elementary exposition of many algorithms and data structures.

Recommended Books

- Aho, Hopcroft, Ullman: The Design and Analysis of Algorithms, Addison Wesley, 1974
An excellent exposition of many useful algorithms by the masters; shorter and deeper than CLRS.
- Knuth: The Art of Computer Programming, Volumes 1-3, Addison Wesley.
This book series gives an encyclopedic treatment by the founder of the analysis of algorithms. A wonderful classic!
- Graham, Knuth, Patashnik: Concrete Mathematics, 2nd edition, Addison Wesley, 1994
An excellent introduction to mathematical techniques that are useful for the analysis of algorithms.
- Garey, Johnson: Computers and Intractability, Freeman and Company, 1979
A useful compendium of NP-complete problems.

Further information

- <http://faculty.cs.tamu.edu/klappi/alg/629.html>