

IE 3097: Algorithms for Engineers

Syllabus

Fall 2007

Basic information

Instructor: Oleg Prokopyev, prokopyev@engr.pitt.edu

Lectures: Friday 3:00- 5:30, Benedum 1060

Office: Benedum 1037

Office hours: Stop by any time my door is open. We will set up formal office hours during the second week of class. You may also contact me to set up an appointment.

Course website: <http://www.engr.pitt.edu/industrial/faculty-staff/prokopyev/ie3097>

All course handouts will be made available on the website.

Textbook: *Algorithm Design* by J. Kleinberg and E. Tardos.

Prerequisites

1. Some coding experience.
2. Interest in algorithms, their design and analysis.

Grading

There will be regular homework assignments, computational projects, and two exams (mid-term and final). Details will be provided. Tentative weighting is 50% homeworks plus projects, 25 % mid-term and 25% final.

Attendance:

The students are responsible for the announcements made in the class.

Topics

We will consider ways that algorithms are designed and analyzed while examining various types of algorithms. We will consider a number of example algorithms in class. The course should be viewed as an introduction to design and analysis of algorithms with a survey of important algorithm types rather than a survey of important algorithms. When possible, we will consider examples that come from students' research interests.

The tentative order of topics is as follows:

- aspects of algorithms to analyze
- running time
- review of sorting/searching algorithms
- greedy algorithms
- divide-and-conquer algorithms
- dynamic programming
- computational complexity, complexity classes

- approximation algorithms and approximability
- randomized algorithms
- heuristics and meta-heuristics

Assignments and collaboration policy

There will be regular homework assignments, at least one project, and a final exam. I have not yet decided about the possibility of a take-home midterm.

Homework collaboration: You can learn a lot from working with other people. Therefore, I encourage you to work together to solve homework problems. You must **write up** your homework solutions **on your own**, however, without assistance from other people. This is to help you and me ensure that you understand the solutions that the group came up with.

Exam collaboration: No collaboration is allowed on exams.

Project collaboration: This will be specified on the project assignment.

If you are ever unsure about the collaboration policy, please contact me for clarification.

Disability

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both me and Disability Resources and Services, 216 William Pitt Union, (412) 648-7890 as early as possible. DRS will verify your disability and determine reasonable accommodations for this course.