Computer Science 511  
Design and Analysis of Algorithms  
Fall 2010

General Information

Description. A study of basic algorithm design and analysis techniques. Emphasis is on learning to formulate algorithmic problems and on developing problem-solving skills.

Prerequisites. CS 311 (undergraduate design and analysis of algorithms) or equivalent. A strong background in programming and discrete mathematics is essential.

Time and Place. MWF 11:00–11:50 a.m., Science 0152

Web Page. www.cs.iastate.edu/~cs511

Instructor. David Fernández-Baca, fernande@iastate.edu, 294-2168, 111 Atanasoff. Office Hours: By appointment; students are also encouraged to drop in whenever the instructor’s door is open.

Teaching Assistants.

- Sanghack Lee, shlee@iastate.edu. Office Hours: TBA
- Yanfei Wang, yanfei@iastate.edu. Office Hours: TBA

References. Our textbook is


The following supplementary references may also prove helpful.

Topics
All chapter references below are to the Kleinberg-Tardos text.

1. Network flow (2 weeks; Chapter 7)
2. Linear programming\(^1\) (2 weeks)
3. NP-completeness (3 weeks; Chapter 8)
4. Fixed-parameter algorithms (2 weeks, Chapter 10)
5. Approximation algorithms (2 weeks; Chapter 11)
6. Randomized algorithms (2 weeks; Chapter 13)

Grading
Final grades will be based on scores on homework assignments, 2 midterm exams, and a final. The weights of these are as follows:

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<tr>
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<th>Weight</th>
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<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
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<tr>
<td>Exam 1</td>
<td>30%</td>
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<tr>
<td>Exam 2</td>
<td>30%</td>
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<tr>
<td>Final</td>
<td>30%</td>
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</tbody>
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Midterm exams will be 2-hours long and held in the evening. Exams 1 and 2 are tentatively scheduled for the weeks of September 27th and November 1st, respectively. The Final is tentatively scheduled for 9:45–11:45 a.m., Monday, December 13th.

Policy on Academic Honesty\(^2\)
Students enrolled in Computer Science courses at ISU are expected to maintain the highest standards of academic integrity. Suspected cases of academic misconduct will be pursued fully in accordance with university policies. Here we provide information to help students avoid unintentional misconduct. For more details, students are strongly urged to consult ISU’s policy on academic dishonesty\(^3\).

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\(^1\)The instructor will provide supplementary material on this topic.
\(^2\)This section is an abridged and adapted from a statement written by Professor Vasant Honavar for Computer Science 572. Thanks to Professor Honavar for allowing us to use this material.
\(^3\)http://www.public.iastate.edu/~catalog/2005-07/geninfo/dishonesty.html
Problem Sets. The primary purpose of assignments is to clarify and enhance the understanding of the concepts covered in the lectures. It is expected that students have independently arrived at solutions that they turn in for problem sets. Nevertheless, past experience has shown that the learning experience is aided by interaction among classmates. Thus, discussion of general concepts and questions concerning the homework assignments among students is encouraged.

Examples of allowed collaboration are the following:

- Discussing the material presented in class or included in the assigned readings that is needed for solving assigned problems.
- Assisting other students in understanding the statement of the problem (e.g., by translating some English phrases unfamiliar to that student).

The following are examples of activities that are prohibited:

- Sharing solutions or fragments of solutions (via email, whiteboard, handwritten or printed copies, etc.).
- Posting solutions or fragments of solutions in a location that is accessible to others.
- Using solutions or fragments of solutions provided by other students (including students who had taken the course in the past).
- Using solutions or solution fragments obtained on the Internet or from solution manuals for text books.
- Using material from text books, reference books, or research articles without properly acknowledging and citing the source.

Exams. The primary purpose of exams is to test the understanding of the concepts covered in class. Exam solutions are expected to be entirely the work of each student. The following is a non-exhaustive list of activities that amount to cheating on an test.

- Copying someone else’s solutions.
- Using notes or reference materials (unless instructed otherwise).
- Altering an exam for re-grading.
- Getting an advance copy of the examination.
- Having someone else write the exam.
Students with Disabilities

Iowa State University complies with the American with Disabilities Act and Section 504 of the Rehabilitation Act. Any student who may require an accommodation under such provisions should contact the instructor as soon as possible. No retroactive accommodations will be provided in this class.