Illinois Institute of Technology
Department of Computer Science

Course Information

CS 430 Introduction to Algorithms
Fall Semester, 2014

Staff

Professor: Edward M. Reingold (reingold@iit.edu)
       Office: Suite 228F Stuart Building
       Office Hours: Immediately after class, or by appointment

Teaching Assistant: (@hawk.iit.edu)
          Office: Room
          Office Hours: Tuesday, Thursday, & Friday 1:30pm–2:30pm

Lecture/Recitation Schedule

Undergraduate section: Class meets 11:25am–12:40pm in 113 Stuart Building (northwest corner of 31st and State) on Mondays and Wednesdays from August 25 through December 6. The TA holds recitation sessions during the semester on Fridays, 11:25am–12:15pm in 113 Stuart Building.

Graduate section: Class meets 10am–11:15am in 107 Stuart Building (northwest corner of 31st and State) on Mondays and Wednesdays from August 25 through December 6. The TA holds recitation sessions during the semester on Fridays, 10am–10:50am in 107 Stuart Building.

Both sections: There will be no class on Monday, September 1 (Labor Day), Monday, October 13 (Fall Break), and Wednesday, November 26 (Thanksgiving Break). There will be no recitation session Friday, November 28 (Thanksgiving Break).

Textbook

Introduction to Algorithms, 3nd edition, by Thomas Cormen, Charles Leiserson, Ronald Rivest, and Clifford Stein, MIT Press, 2009. **Earlier editions are not acceptable.** Hardcopy is *strongly* suggested because the exams will be open book, but nothing electronic will be permitted.

Prerequisites

CS 331 and CS 330 or Math 230 or CS 401 or CS 403.

By topic: Recursion, lists, stacks, queues, trees, counting/recurrences, mathematical proofs

Course Outline

[**1 lecture**] Introduction—How to draw a tree.
[**1 lecture**] Review of asymptotics and recurrence relations (Chapters 1–4; notes).
[**4 lectures**] Sorting (Chapters 6–9).
[**2 lectures**] Binary search trees (Chapters 12–13, omitting section 12.4).
[**1 lecture**] Augmenting data structures (Chapter 14).
     Exam 1—Monday, September 29
[**2 lectures**] Dynamic programming (Chapter 15).
[**1 lecture**] Greedy Algorithms (Chapter 16, omitting sections 16.4 and 16.5).
[**2 lectures**] Amortized analysis (Chapter 17).
[**2 lectures**] Heaps (Chapter 19).
     Exam 2—Wednesday, October 29

[**1 lecture**] Disjoint sets (Chapter 21, omitting section 21.4).
[**3 lectures**] Graphs (Chapters 22–25).
[**3 lectures**] NP-completeness (Chapter 34).
[**1 lecture**] Approximation Algorithms (Chapter 35, sections 35.1 and 35.2 only).
    Exam 3—Wednesday, December 3

Homepage and Handouts

All handouts will be in PDF on the class webpage at: `www.cs.iit.edu/~cs430`. This web site may be used to post announcements, so look at it frequently.

Reading Assignments

The list of reading assignments (on the web site given above) for the semester indicates the material that is to be read *before* each lecture.

Homework & Honesty Pledge

There will be about eight homework assignments (roughly one every two weeks). You may discuss only general problem-solving strategies with other students; your homework solutions *must be entirely your own work* and clearly distinguished from other homeworks. Academic dishonesty will be severely punished.

You must sign a pledge (the form is on the web site given above) stating that all work you turn in will be your own, that you will neither give nor accept any collaboration or outside help, and that you will cite any reference used except the textbook, including any Web sites. This pledge must be turned in with the first assignment; no homework will be accepted until the signed pledge is submitted.

Homework may be handed in without penalty until solutions are posted, but may *not* be handed in thereafter.

Examinations

There will be three equally weighted, in class, *open book* exams:

  Exam 1:   Monday, September 29
  Exam 2:   Wednesday, October 29
  Exam 3:   Wednesday, December 3

These exams are non-cummulative. There is no final exam.

During the lectures certain problems may be noted as "good exam questions." Some of these problems will appear on the exam.

Grading Policy

The *approximate* weighting scheme will be 25% for the homework assignments and 25% for each of the exams.

Bugs

Occasionally Professor Reingold, being human, makes mistakes in lectures. If you catch one, and point it out on the spot in lecture, you'll be rewarded with a very valuable green glow-in-the-dark plastic bug. Aside from its intrinsic beauty and value, it is worth extra credit toward your final grade: On "Bug Day" at the end of the semester, bring your collection in to be counted and noted in the Blackboard grade records.

Grade Distribution

The last time that Professor Reingold taught CS 430 (Spring, 2012), the distribution of final grades was 18 A, 16 B, 14 C, 2 D and 1 E.