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Spring 2007

CS 840: Advanced Topics in the Theory of Computation

Thomas Sudkamp

Wright State University - Main Campus, thomas.sudkamp@wright.edu

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CS 840: Advanced Topics in the Theory of Computation

Syllabus: Spring 2007

Time: 1:30-2:40 Monday, Wednesday

1:30-2:40 Friday March 30, April 13, 27, May 11, 25

Room: 302 Russ

Instructor: Professor Sudkamp

Office Hours: 2:40--4:00 Monday, Wednesday, Friday, and by appointment

Office: 431 Russ Engineering Center

email: tsudkamp@cs.wright.edu

phone: 775-5118

The text for this class is *Introduction to Algorithms* by Cormen, Leiserson, Rivest, and Stein (2nd edition). There is an enormous amount of pertinent material in Part I, Foundations, and the Appendix Mathematical Background. Many of these topics have been introduced in previous courses, in particular in Data Structures and Discrete Mathematics. You may often find it necessary to refer to the sections in the book covering these topics. We will briefly review the first four chapters in class.

The course begins by introducing the following general strategies for solving problems and analyzing the complexity of these approaches:

Chapter 2. Divide and conquer algorithms

Chapter 15. Dynamic programming

Chapter 16. Greedy algorithms

After covering these basic problem-solving strategies, we will apply these techniques to a number of applications. Applications that may be considered include

* Parallel algorithms

* Graph algorithms (chapters 22--26)

* String matching algorithms (chapter 32)

Grading: A midterm exam, a final exam, and two homework assignments will be used to determine the grades for this class. The grade will be determined in following manner

Midterm 35%
Final 45%
Homework 20% (10% each)

The dates for the exams are

Midterm: Friday, April 27
Final: Monday, June 4, 1:00-3:00

The final may be in class, take home, or a combination of the two. This will be discussed in class.

There will be no make-up exams (other than for documented emergencies). Be sure to arrange your schedule to be available for the exam periods.

In class exams will be open book and open notes.

Attendance: Attendance at classes is strongly recommended. If you miss a class, it is your responsibility to obtain class notes from other students to be prepared for subsequent topics. There will be no make-up exams except for documented emergencies.