CMSC 451: Design and Analysis of Computer Algorithms

Summer 2007

1 Course Information

- **Class Time and Room:** MTWTF 9:30-10:50, CSI 1122
- **Class Homepage:** www.cs.umd.edu/class/summer2007/cmsc451/index.html
- **Instructor:** Arkady Yerukhimovich (arkady at cs dot umd dot edu)
- **Textbook: Algorithm Design**(ISBN: 0-321-29535-8) by Jon Kleinberg and Eva Tardos

2 Course Description

2.1 Course Overview

This course presents the techniques for designing, analyzing, and formally proving correctness of efficient computer algorithms. The course will cover the following topics: Graph algorithms, algorithm design paradigms such as greedy algorithms, divide-and-conquer, and dynamic programming, lower bounds and NP-completeness. Additional topics may be added if time permits.

2.2 prerequisites

CMSC351 or equivalent is the prerequisite for this class. Students are expected to know basic programming concepts (loops, conditionals, and recursion). Students are also expected to know some basic data structures (lists, stacks, queues, trees). Some knowledge of discrete math, proofs by induction, and mathematical maturity and ability to make formal arguments is also required.

3 Grading and Exams

The classwork will consist of weekly homeworks and two exams, a midterm and a comprehensive final. The final will be given in class on the last day of class(August 24). The midterm will be in class on a date to be determined. The exams will be closed-book and closed-notes.

3.1 Homeworks

Weekly homeworks will be given to reinforce the material. The homeworks will be due at the beginning of class on the due date and no late homeworks will be accepted. You may work together on the homeworks, but everyone must do their own write-up, in their own words(copied homeworks will receive a 0). Also, include the names of people you worked with on your homeworks. Make sure you understand the answers to all homework problems as the exam problems will be similar.

3.1.1 Punt Rule

The following Punt Rule will be used on all homeworks. If you can not solve a problem you can punt by writing "PUNT" as your answer. For doing this, you will receive 1/3 of the credit for the problem (rounded down). You may also punt on part of a problem. You are allowed to Punt on at most 2 problems per assignment. Problems left blank without "PUNT" written will not be considered a Punt and will receive no credit. Note, the punt rule can only be used on homeworks and Punts will not be acceptable on an exam.

3.2 Grade Breakdown

- **Homeworks:** 35%
- **Midterm:** 25%
- **Final:** 40%