CS 312: Algorithm Analysis and Design

Class Syllabus

September 13, 2005

Course Objective:

Computer Science 312 (Introduction to the Design and Analysis of Algorithms) is a very important course for students to design better algorithms for solving new problems. Some mathematical concepts, e.g., mathematical induction, combinatorics, and recurrence equations, are introduced to analyze performance of algorithms. The course will cover algorithm design techniques: Divide-and-Conquer, Transform-and-Conquer, dynamic programming and greedy methods. Topics include advanced sorting and searching methods, graph algorithms and geometric algorithms. For each topic, beside in-depth coverage, one or more representative problems and their algorithms will be discussed.

Prerequisite:

The prerequisite for this class is CS 222 and CS 223

Class Time:

Monday, Wednesday, Friday	9:30 - 10:55 am	SCI 414
Thursday	8:00 - 10:25 am	SCI 407

Texts

Introduction to the Design & Analysis of Algorithms, Anany Levitin (ISBN: 0-201-74395-7). Publisher: Addison Wesley.

The books are available in the CSUB Bookstore and at retail and internet bookstores.

The following chapters will be covered:

Chapter 1	Introduction
Chapter 2	Fundamental of the Analysis of Algorithm Efficiency
Chapter 3	Brute Force
Chapter 4	Divide-and-Conquer
Chapter 5	Decrease-and-Conquer
Chapter 6	Transform-and-Conquer
Chapter 7	Space and Time Tradeoffs
Chapter 8	Dynamic Programming
Chapter 9	Greedy Technique

Grading:

Grades will be based on the homework + labs (30%), two midterm exams (20%+20%), and final exam (30%).

Lab assignments will be made at the beginning of each Thursday lab and are usually due by the start of class on next Wednesday. Labs will be graded as complete, incomplete, or undone. Students are encouraged to work together during the lab time. Homework assignments will be made approximately every week and will include both written exercises and programming. The due date of each assignment will be announced when the assignment is made. Assignments will be graded for logical correctness and as well as programming style. Guidelines for labs and homework assignments will be distributed when the first of these assignments is made. The midterm exam will be given during class time on Friday, October 14, 2005, and November 11, 2005. **The final exam is on Wednesday, November 30, 2005, 8:00 am-10.30 am in the classroom**. The material covered in each exam will be announced in class.

Policy:

While the discussion of class materials by students is encouraged, all homework submitted must be the original work of each individual student. Copying the work of others, including solutions published on the Internet, violates standards of academic honesty and will result in severe penalties. Students take responsibility for missing lectures, labs and examinations. **Late assignments and makeup examinations will not be accepted**.

Instructor: Dr. Wei LI
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Hours: Monday, Wednesday, Friday 8:30 – 9.00am and 11:am - 12: pm.
Additional times by appointment
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Website: http://www.cs.csubak.edu/~wli/Wei_Li_Teaching/CS_312/