

CSC 512 (Spring 2011-2012)

Course Syllabus

Course title: Analysis and Design of Algorithms (a graduate course)

Instructors:

- Dr. Mohamed Maher Ben Ismail (mbenismail@ksu.edu.sa)

Credit hours: 3

Web site: <http://faculty.ksu.edu.sa/mbenismail>

Office hours: Check the web site of the course.

Goals of the course: This is an introductory level graduate course in the design and analysis of algorithms. The aim of the course is to provide a solid background in designing and analyzing algorithms. It is hoped that a student will be able to analyze and compare algorithms based on their efficiency, and also design efficient algorithms using several algorithm design paradigms.

Recommended textbooks: There is no official textbook for this course; however, we highly recommend any of those listed below:

- Cormen, Leiserson, Rivest and Stein, Introduction to Algorithms, 2/e, MIT Press, 2009.
- Kleinberg and Tardos, Algorithm Design, Addison Wesley, 2006.

Topics (tentative):

Mathematical preliminaries, asymptotic notations, Practical complexities, String Matching algorithms, advanced data structures (heaps, disjoint set union/find). Common design techniques and examples: divide and conquer, greedy algorithms, dynamic programming, backtracking, Network Flow, Randomized algorithms, Introduction to NP theorem.

Evaluation:

- **Assignments:** 20 points
- **Group Term Project:** 15 points
- **Midterm exams (2):** 10 + 15 points

- **Final exam:** 40 points

Notes for email communication

- Your email header must start with *CSC512*
- Send your email to mbenismail@KSU.edu.sa email address.
- Please write your name and your ID at the end of the email