UMass Boston CS 310, Summer 2018
Advanced Data Structures and Algorithms

Lectures: Monday, Tuesday & Thursday 6:00 – 7:30, M02-0207
Course homepage: http://www.cs.umb.edu/~mshadian/cs310
Instructor: Mohammad Hadian
  Email: Mohammad.Hadian001@umb.edu
  Office: S-3-124 Office hours: Tue & Thu 4:00 – 6:00; or by appointment
Suggested Textbook: Algorithm Design, Jon Kleinberg and Eva Tardos, Pearson

Course Description
This course is a systematic study of the methods of structuring and manipulating data in computing, and the design and analysis of algorithms. We will use Java programming language.

Prerequisites
- CS 210: Java; basic data structures: arrays, lists, queues, priority queues, stacks, trees, hash tables, sets, maps; basic algorithms: searching, sorting
- CS 240, C, static and dynamic memory allocation
- Math 140

Evaluation
The total score consists of:
- Exams (65%)
  - 3 total, use the best 2 scores, the lowest score is dropped.
  - There is no makeup test during the semester.
  - All exams will be closed-book.
- Homeworks (30%)
  - Homework will be assigned every week or two (5-7 homeworks), the lowest score will be dropped.
  - Homework assignments will be posted on the course homepage.
  - Turn in the paper copy of a homework in class and submit the electronic copy of the homework through Blackboard.
  - No late homework is accepted.
  - You are welcome to discuss homeworks with other students, you should state whom you discussed with in your homework, this will not lower your grade. You must write up homework solutions independently.
- Attendance and Class exercise
  - Attendance is required and is worth 5% of your final grade. You are responsible for keeping yourselves up to date if you miss a class.
  - You will get extra points if you complete the in-class exercise.
**Tentative Schedule**
- week 1: runtime analysis
- week 1-2: basic data structures
- week 2-3: searching and sorting
- week 3-4: trees
- week 4: exam 1
- week 5: recursion, backtracking
- week 6-7: dynamic programming, greedy
- week 7: exam 2
- week 8-9: graphs
- week 9: exam 3
- (If have time) Huffman coding, randomization, NP-complete

The total score $S$ is converted to a letter grade according to the following table.

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<th>$S$ value</th>
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**Accommodation**
Section 504 of the Rehabilitation Act of 1973 offers guidelines and support for curriculum modifications and adaptations for students with documented disabilities. If applicable, students may obtain adaptation recommendations from the Ross Center for Disability Services, Campus Center, Upper Level, Room 0211, 617-287-7430. The student must present these recommendations and discuss them with each professor within a reasonable period, preferably by the end of Drop/Add period.

**Code of Conduct**
It is the expressed policy of the University that every aspect of academic life – not only formal coursework situations, but also all relationships and interactions connected to the educational process – shall be conducted in an absolutely and uncompromisingly honest manner. The University presupposes that any submission of work for academic credit is the student’s own and is in compliance with University policies, including its policies on appropriate citation and plagiarism. These policies are spelled out in the [Code of Conduct](#).

**Reserve Clause**
The instructor reserves the right to make changes in the syllabus when necessary to meet the learning objectives, to compensate for missed classes, schedule changes, or hardware, software, and network failures, or for similar legitimate reasons.