Course Syllabus – CSC 638/738 – Advanced Algorithms

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Office Hours: 11:00-12:00 (MW) + 1:00-2:30 (TTh) + by appointment

Course Prerequisite(s)
1. CSC 413/513—Algorithms (or equivalent): Required.
2. Thorough knowledge of basic computational concepts, discrete mathematics and statistics: Preferred.

Textbook(s) and/or Other Required Material

Additional course materials may be posted on the class website (URL is case-sensitive):
http://www.cs.usm.edu/~banerjee/CSC738
Various notifications and assignments will also be posted on this webpage, so be sure to check this URL often.

Attendance
You should do your best to attend every class. Knowledge presented in class will be critical for passing the midterm and the final.

Email policy
If you send me any email, you must include your full name in the email, and mention “CSC 738” on the subject line. I may not respond to your email if you fail to do so.

Workload
There will be a few home-works/assignments in addition to a midterm, and a final exam. The workload will be targeted to roughly 6 to 8 hours per week (on the average) outside of class. Additionally, each student must make one presentation of some algorithmic approach for solving a non-trivial problem, along with analyses. This could be based on your graduate research.

Assignments
Assignments must be submitted on A4-sized paper, and stapled. Emails, or dog-eared submissions will not be accepted. Hand-written assignments must be clear and legible. Submissions not adhering to these requirements will be considered “not submitted”.

Grading
40% Assignments
10% Presentation
25% Midterm
25% Final
Late assignments will be penalized by 20% per calendar day, except for extreme circumstances. If possible, give the instructor advance notice of any problems. In order to get a good distribution of
grades, it might be necessary to apply a scale or curve. You may not be allowed to take the midterm or the final exams on days other than the declared dates.

**Special accommodations**
A student with a disability that qualifies under the American with Disabilities Act (ADA) should contact the Office for Disability Accommodations (ODA). Address:

Office of Disability Accommodations  
118 College Drive #8586  
Hattiesburg, MS 39406-0001  
Phone: (601) 266-5024, Fax: (601) 266-6035  

Individuals with hearing impairments can contact ODA using the Mississippi Relay Service at 1-800-582-2233 (TTY), or email Suzy Hebert at Suzanne.Hebert@usm.edu

**Academic honesty**
Students are encouraged to collaborate in preparing for tests, and even for homeworks/assignments. However, the final work submitted must be the student's own work. No collaboration will be allowed during tests. Any form of academic dishonesty will not be tolerated and will draw severe penalties. See the USM Undergraduate Bulletin for the possible penalties.

**Course Plan**
I plan to cover some important concepts that are usually skipped (or not covered in depth) in undergraduate or introductory graduate courses. This means the course will be more of a gap-filler than a regular, smooth-flowing course. The success of this strategy depends on your mastery of the concepts taught in lower level classes. The tentative list of topics is:

- Probabilistic analysis and randomized algorithms (ch. 5)
- Median & order statistics (ch. 9)
- Dynamic programming (ch. 15)
- Greedy algorithms (ch. 16)
- Amortized analysis (ch. 17)