

CMSC 351 : Syllabus : Fall 2007

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Teaching Assistant information and all office hours will be posted at:
<http://www.cs.umd.edu/class/fall2007/cmsc351/>

Textbook: Introduction to Algorithms (Second Edition) by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein. ISBN: 0-07-013151-1

Catalog Description: A systematic study of the complexity of some elementary algorithms related to sorting, graphs and trees, and combinatorics. Algorithms are analyzed using mathematical techniques to solve recurrences and summations.

Some Course Goals: Obtain a thorough grounding in basic algorithms and related data structures, asymptotic bounds (eg: upper and lower), recurrences, core graph algorithms (eg: DFS, BFS, MST), core algorithm strategies (eg: divide & conquer, greedy), randomization, reductions, and NP-completeness.

Grading Scheme:

Exams: 80% (Two Semester Exams - 22% each, Final Exam - 36%)

The two semester exams will be held on Thursday evenings at a common time for both sections. The date for the first exam will be on Thursday, October 4th, 6-7:30pm. The date for the second exam will be on Thursday, November 15th, 6-7:30pm. The cumulative Final Exam for both sections will be held on Saturday, December 15th, 4-6pm. If you are unable to take one of these exams at the regular time due to a work or other scheduling conflict, please let us know by the end of the schedule adjustment period (09/12/2007) and provide written proof of your conflict so that we can confirm it. A conflict exam will be scheduled for the Friday afternoon on the day after each semester exam for those with Thursday evening conflicts. A conflict exam will be scheduled for Monday December 17th for the final exam for students with a Saturday conflict. All exam rooms will be announced on the class web site. If you are sick on the day of an exam, you will need to provide us with a note from a medical doctor indicating the dates and times you were incapacitated due to illness as soon as you are well again, and include the doctor's phone number so that it can be confirmed. Self-documentation of illness is **not** sufficient support to excuse an absence. With a properly documented medical excuse, a make-up for a missed exam will be promptly scheduled.

Homework and Project(s): 20%

- Homework and projects are all individual efforts. You are not allowed to discuss them with anyone other than the instructor and/or the teaching assistants for this class. You are not to search the Internet for solutions.
- All written homework assignments will be due at the beginning of the class session indicated.
- Missed homework assignments, or late projects due to a valid, documented medical reason will be handled in a manner to be determined at that time. Again, a documented medical excuse is required, as defined above.

Note: Each semester exam and the final exam will be curved individually as/if needed. It is not guaranteed that all exams will be curved. The final letter grade will be based on 90% and above for an A, 80% for a B, etc. The final grade will not need to be curved since each contributing exam grade may be.

If you require any special DSS accommodations, you must provide paperwork from DSS by the end of the schedule adjustment period (09/12/2007).

Academic Honesty:

Homework and projects and exams are individual endeavors and are to be done by you. You may NOT discuss these with anyone other than the instructor or one of the teaching assistants for this class. Any students found to be turning in identical or unusually similar homework or projects, collaborating on homework or projects, or cheating on exams will be turned over to the Student Honor Council for review and a hearing. The default decision of the Council is typically to give you an XF for the course but they may go as far as suspending you from the University.

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.studenthonorcouncil.umd.edu/whatis.html>.

Any student eligible for and requesting reasonable academic accommodations due to a disability is requested to provide, to the instructor in office hours, a letter of accommodation from the Office of Disability Support Services (DSS) within the first two weeks of the semester.

Topics will include (though not necessarily in strict order):

- Review of induction and introduction to constructive induction, topics in Calculus such as integration, topics in Probability such as expected values.
- Simple dynamic programming and approximations examples (eg: via Fibonacci recursive, recursive w/table, approximation formula).
- Review and extension of asymptotics (eg: Big-O, Omega, Theta).
- Recurrences and ways to solve some basic recurrences.
- Algorithms and analyses for searching and sorting.
- Basic data structures and some related algorithms and analysis of those algorithms. Examples may come from Lists, BSTs, balanced trees (eg: AVL, heaps), heaps, and Union-Find problems.
- Algorithms and analyses for basic graph algorithms such as DFS, BFS, MST.
- Algorithm-design paradigms: examples and patterns such as greedy algorithms, Divide and Conquer algorithms, and randomized algorithms.
- Reductions and NP-Completeness and approximation algorithms.