

CS 482 Summer 2003
Syllabus and Schedule

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CS482 is an introduction to the design and analysis of algorithms. The primary goal of this course is to introduce some common techniques and issues that arise in the study of algorithms. The topics include dynamic programming, network flows, NP-completeness, intractability, and muchos more. We expect the students are familiar with the topics from CS211, CS 280, and CS 312. (CS 381/481 is also a prerequisite, but as far as CS482 is concerned, serves primarily to ensure the ability to write clear and mathematically rigorous proofs, and provides some exposure to the concept of a reduction).

We want our students to come out of the course with the confidence, tools, and techniques to tackle difficult problems. They will learn how to assess the main challenges of a problem, find one or more solutions, and determine which solution is best for the application. Finally, they will learn how to recognize and prove that certain problems are computationally intractable, and what can be done in these situations.

A tentative schedule is listed on the back of this page. We intend to stick to it as much as possible, but we're not perfect, so expect changes.

Meeting	Date	Topic	Suggested Reading
Lec. 1	July 7	Course Overview, Syllabus, Stable Matchings	1.1, 1.2
Lec. 2	8	Graphs Review & Representative Problems	1.3, 1.4, Ch 2
Lec. 3	9	Greedy Algorithms	3.1
Lec. 4	10	Greedy Algorithms	3.2
Lec. 5	11	Minimum Spanning Trees	3.3, 3.4
Lec. 6	14	Divide & Conquer	Ch 4
Lec. 7	15	Dynamic Programming	5.1
Lec. 8	16	Dynamic Programming	5.2
Lec. 9	17	Dynamic Programming	5.3
Lec. 10	18	Dynamic Programming	5.4, 5.5, 5.6
Lec. 11	21	Alexa's Essential Mix no. 1	
Prelim I	22	Matchings, Greedy, D& C, Dynamic Programming	
Lec. 12	23	Network Flows	
Lec. 13	24	Network Flows	
Lec. 14	25	Network Flows	
Lec. 15	28	Network Flows	
Lec. 16	29	Network Flows	
Lec. 17	30	NP Completeness	
Lec. 18	31	NP Completeness	
Lec. 19	Aug 1	NP Completeness	
Lec. 20	4	NP Completeness	
Lec. 21	5	Alexa's Essential Mix no. 2	
Prelim II	6	Greedy, D& C, Dynamic Programming, Flows, and NP	
Lec. 22	7	Special Cases of NP Problems	
Lec. 23	8	Approximation Algorithms	
Lec. 24	11	Approximation Algorithms	
Lec. 25	12	Probabilistic Algorithms	
Lec. 26	13	Online Algorithms	
Lec. 27	14	Local Search	
Lec. 28	15	Alexa's Essential Mix no. 3	
August 18		Final Exam, Hollister 368, time to be determined	