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Lecture Notes

COURSE HOME

The students in this course were required to take turns scribing lecture notes. They were provided with detailed instructions and a template. The process of scribing lecture notes provides students with valuable experience preparing mathematical documents, and also generates a useful set of lecture notes for the class.

SYLLABUS

Notes are used with the permission of the student scribes.

CALENDAR

READINGS

LECTURE NOTES

ASSIGNMENTS

STUDY MATERIALS

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LEC #	TOPICS	LECTURE NOTES
1	Fibonacci heaps	(PDF)
2	Network flows	(PDF)
3	Maximum flow; minimum cost circulation	(PDF)
4	Goldberg-Tarjan min-cost circulation algorithm	(PDF)
5	Cancel-and-tighten algorithm; binary search trees	(PDF)
6	Splay trees	(PDF)
7	Dynamic trees (part 1)	(PDF)
8	Dynamic trees (part 2)	(PDF)
9	Linear programming (LP)	(PDF)
10	LP: duality, geometry, simplex	(PDF)
11	LP: complexity; introduction to the ellipsoid algorithm	(PDF)
12	LP: ellipsoid algorithm	(PDF)
13	LP: applications of the ellipsoid algorithm	Notes not available
14	Conic programming I	(PDF)
15	Conic programming II	(PDF)
16	Approximation algorithms	(PDF)
17	Approximation algorithms (facility location)	(PDF)
18	Approximation algorithms (max-cut)	(PDF)
19	Max-cut and sparsest-cut	(PDF)
20	Multi-commodity flows and metric embeddings	Notes not available
21	Convex hulls	Notes not available
22	Convex hulls and fixed-dimension LP	(PDF)

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LEC #	TOPICS	LECTURE NOTES
24	Approximation scheme for the Euclidean traveling salesman problem	Notes not available
25	Streaming algorithms	Notes not available
26	Streaming algorithms (cont.)	Notes not available

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