ISE 632: Network Flows and Combinatorial Optimization

University of Southern California, Spring 2019

Instructor

	Prof. John Gunnar Carlsson
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Office hours:	Wednesdays 1:00 - 3:00

Optional textbooks

- Ravindra K. Ahuja, Thomas L. Magnanti, and James B. Orlin. Network flows: theory, algorithms, and applications. Prentice Hall, 1993. Available online at
https://dspace.mit.edu/bitstream/handle/1721.1/49424/networkflows00ahuj.pdf

- Bernhard Korte and Jens Vygen. Combinatorial optimization: theory and algorithms. Springer, 2008. Available online via USC Libraries.

- David Easley and Jon Kleinberg. Networks, crowds, and markets: Reasoning about a highly connected world. Cambridge University Press, 2010. Available online at
http://www.cs.cornell.edu/home/kleinber/networks-book/networks-book.pdf

- Adam Kasperski. Discrete optimization and network flows. Wrocław University of Technology, 2011. Available online at http://www.ioz.pwr.wroc.pl/pracownicy/kasperski/prv/discropt.pdf.

Meeting time/location

VHE 210, 9:30 - 10:50, Tuesday/Thursday

Course summary

- Graph theory

- Shortest paths

- Matching problems

- Total unimodularity

- Network flow problems

- Spanning trees

- Location problems

- (Time permitting) Probability theory of combinatorial problems

Grading

Grading will be based on about 10 problem sets, a midterm exam, a final exam, and a project. The final grade averages will be computed as follows:

Problem sets	20%
Project	20%
Midterm exam	30%
Final exam	30%

Students may collaborate in groups of two or three on homework, but each student must write up their own assignments. Assignments must be neatly written with all pages stapled together.