

42113 Networks and Integer Programming

Lecture Plan, Fall 2010

Version 1.0, August 31, 2010

Lectures: Building 306, lecture hall 37: Tuesdays 13.00 - 15.00 and Fridays 8.30 - 10.00.

Exercises: Tuesdays 15.15 - 17.00 and Fridays 10.15 - 12.00 lecture hall 37 in building 306. For computer exercises, the location is building 303 room R47.

Lecturers: Jesper Larsen (jla), building 426, office 055, e-mail: jesla@man.dtu.dk. David Pisinger (pi), building 426, office 058, e-mail: pisinger@man.dtu.dk. Teaching assistant: Charlotte Vilhelmsen, building 426, e-mail: chaan@man.dtu.dk.

Teaching material: L.W. Wolsey: "Integer Programming", John Wiley, 1998 (LW). J. Larsen and J. Clausen: "Supplementary notes to Networks and Integer Programming", IMM, DTU, 2009 (LC).

Project assignments: The course contains two compulsory project assignments. Project 1 starts on 21 September and the deadline for handing in the report is 29 October. Project 2 starts on 5 November and the deadline for handing in the report is 30 November.

Week	Date	Lecture topic	Lecturer	Material	Projects
35	31 aug	Introduction	jla	–	
	3 sep	Linear Programming – Simplex	pi	slides	
36	7 sep	Dual simplex and Duality	pi	slides, LC2	
	10 sep	Modelling with IP variables	jla	slides, LW1	
37	14 sep	Formulations of Integer Programs	jla	LW1	
	17 sep	Optimality, relaxation, and bounds	jla	LW2	
38	21 sep	Data structures and complexity	pi	LC3	P1 start
	24 sep	Minimum Spanning Trees	pi		
39	28 sep	Shortest Paths	pi	LC4	
	1 oct	Maximum Flow I	pi	LC6	
40	5 oct	Maximum Flow II	pi	LC6	
	8 oct	Min Cost Flow I	pi	LC7	
41	12 oct	Min Cost Flow II	pi	LC7	
	15 oct	Cancelled – help for project I	–	–	
FALL BREAK					
43	26 oct	Cancelled – help for project I	–	–	
	29 oct	Dynamic Programming	pi	LW5	P1 end
44	2 nov	Complexity and problem reduction	pi	LW6	P2 start
	5 nov	Branch-and-Bound I	jla	LW7	
45	9 nov	Branch-and-Bound II	jla	LW7, LW8	
	12 nov	Lagrange Duality	jla	LW10	
46	16 nov	Cutting Planes and Branch-and-Cut	jla	LW8	
	19 nov	Strong valid inequalities	jla	LW9	
47	23 nov	Cancelled – help for project II	–	–	
	26 nov	Cancelled – help for project II	–	–	
48	30 nov	Heuristics	jla	LW12	P2 End
	3 dec	Branch-and-Cut for symmetric TSP	jla	LW10	