

CS170 | Efficient Algorithms and Intractable Problems

Spring 2018

Lecture: Tu/Th 3:30-5:00 pm, 1 Pimentel

Calendar

Wk	Date	Lecture Topic	Readings	Section	Homework
0	1/16 Tu	Introduction, big-O notation, arithmetic	Chapters 0 and 1.1	No Section	Homework 0 (assets/hw/hw00.pdf) Solution (assets/hw/hw00-sol.pdf) (Template) (assets/hw/hw00-template.tex)
	1/18 Th	Divide-and-Conquer	Chapters 2.1, 2.2, 2.3		
1	1/23 Tu	Divide-and-Conquer	Chapters 2.4, 2.5, 2.6	Section 1 (assets/disc/dis01.pdf) (Sol (assets/disc/dis01-sol.pdf)) (Walkthrough (https://www.youtube.com/watch?v=jY2GelUCA0Y&feature=youtu.be))	Homework 1 (assets/hw/hw01.pdf) Solution (assets/hw/hw01-sol.pdf) (Template) (assets/hw/hw01-template.tex)
	1/25 Th	Fast Fourier Transform	Chapter 2.6		
2	1/30 Tu	Decompositions of graphs	Chapter 3	Section 2 (assets/disc/dis02.pdf) (Sol (assets/disc/dis02-sol.pdf))	Homework 2 (assets/hw/hw02.pdf) Solution (assets/hw/hw02-sol.pdf) (Template) (assets/hw/hw02-template.tex)
	2/1 Th	Paths in graphs	Chapters 4.1, 4.2, 4.3, 4.4		
3	2/6 Tu	Paths in graphs	Chapters 4.4, 4.5, 4.6, 4.7	Section 3 (assets/disc/dis03.pdf) (Sol (assets/disc/dis03-sol.pdf))	Homework 3 (assets/hw/hw03.pdf) Solution (assets/hw/hw03-sol.pdf) (Template) (assets/hw/hw03-template.tex)
	2/8 Th	Greedy Algorithms	Overview of Chapter 5, Chapter 5.4		
4	2/13 Tu	Midterm 1	-	Section 4 (assets/disc/dis04.pdf) (Sol) (assets/disc/dis04-sol.pdf)	Homework 4 (assets/hw/hw04.pdf) Solution (assets/hw/hw04-sol.pdf)
	2/15 Th	Minimum Spanning Trees	Chapters 5.1		
5	2/20 Tu	Greedy Algorithms	Chapter 5.2, 5.3	Section 5 (assets/disc/dis05.pdf) (Sol (assets/disc/dis05-sol.pdf))	Homework 5 (assets/hw/hw05.pdf) (Sol) (assets/hw/hw05-sol.pdf)
	2/22 Th	Dynamic Programming	Chapter 6		
6	2/27 Tu	Dynamic Programming	Chapter 6	Section 6 (assets/disc/dis06.pdf) (Sol) (assets/disc/dis06-sol.pdf)	Homework 6 (assets/hw/hw06.pdf) Solution (assets/hw/hw06-sol.pdf)
	3/1 Th	Linear Programming	Chapter 7.1		
7	3/6 Tu	Network Flow	Chapter 7.2	Section 7 (Sol)	Homework 7 (assets/hw/hw07.pdf)

	3/8 Th	Duality	Chapter 7.4		
8	3/13 Tu	Zero-Sum Games	Chapter 7.5	Section 8 (Sol)	Homework 8
	3/15 Th	Reductions, Bipartite Matching	Chapter 7.3		
9	3/20 Tu	Midterm 2	-	Section 9 (Sol)	Homework 9
	3/22 Th	Search Problems	Chapter 8.1		
10	3/27 Tu	Spring Break	-	Section 10 (Sol)	Homework 10
	4/1 Th	Spring Break	-		
11	4/3 Tu	NP-Completeness	Chapters 8.2, 8.3	Section 11 (Sol)	Homework 11
	4/5 Th	Coping with NP-Completeness	Chapter 9		
12	4/10 Tu	Modular arithmetic, Primality Testing	Chapters 1.2, 1.3	Section 12 (Sol)	Homework 12
	4/12 Th	Quantum factoring (or other)	Chapter 10		
13	4/17 Tu	Hashing, Sketching, Streaming	Chapter 1.5 + Notes	Section 13 (Sol)	Homework 13
	4/19 Th	Hashing, Sketching, Streaming	Notes		
14	4/24 Tu	Multiplicative updates	N/A	Section 14 (Sol)	Homework 14
	4/26 Th	Applications of multiplicative updates	N/A		
15	5/3 Tu	Dead Week	-	-	-
	5/5 Th	Dead Week	-		
16	5/11 Fri	Final Examination	-	-	-

Discussion Schedule

Start Time	Section		
Tues 5:00 p.m.	Barrows 151 (Aarash)		Wheeler 202 (Nick T.)
Wed 9:00 a.m.	Dwinelle 215 (Chinmay)		
Wed 10:00 a.m.	Moffitt Library 150D (Chinmay)		Mulford 240 (Simin)
Wed 11:00 a.m.	Barrows 56 (Aditya M.)		Giannini 141 (Nick W.)
Wed 1:00 p.m.	Dwinelle 215 (Yuxiang)	Wheeler 108 (Nikhil)	Soda 405 (James)
Wed 2:00 p.m.	Wheeler 200 (Aditya B.)	Etcheverry 3105 (Owen)	Soda 310 (James)
Wed 3:00 p.m.	Wheeler 202 (Aditya B.)	Wheeler 220 (Harley)	Soda 310 (Michael)
Wed 4:00 p.m.	Dwinelle 223 (Vinay)		
Wed 5:00 p.m.	GPB 107 (Benjamin)		Moffitt Library 150D (Mudit)