Class number	Day	Date	General topic	specific topics	HW due & exams [ ] denotes automatic extension
1	Mon	1/20	1. impossible programs (undecidability)	Proof by contradiction. Python programs, decision programs, programs analyzing other programs.	
2	Thu	1/23		Undecidability of yes, crash, halt.	
3	Mon	1/27	2. Turing machines and universal computers	equivalence of python and turing machines	HW1
4	Thu	1/30		universal programs; universal TMs	[HW1]
5	Mon	2/3	3. undecidability is everywhere (reductions; Rice's theorem)	reductions	HW2
6	Thu	2/6		Rice's theorem	[HW2]
7	Mon	2/10	4. You can't prove everything that's true (Godel's first incompleteness theorem)	logical systems	HW3
8	Thu	2/13		Godel's theorem	[HW3]
9	Mon	2/17	5. Efficiency matters (complexity classes Poly and Exp)	background (computational models and motivation)	HW4
10	Thu	2/20		--	exam 1
11	Mon	2/24		Poly and Exp	
12	Thu	2/27		provably non-Poly problems	
13	Mon	3/3	6. Computation with (very) finite resources (finite automata, regular expressions, regular languages, pumping lemma)	dfas	HW5
14	Thu	3/6		regexps	[HW5]
	Mon	3/10		spring break	
	Thu	3/13			
15	Mon	3/17		pumping lemma	
16	Thu	3/20		homework lab and exam revision	HW6
17	Mon	3/24	7. Nondeterminism (NFAs, nondet TMs, NP)	nondet programs and Turing machines. Nondet running time. Class Npoly	[HW6]
18	Thu	3/27		--	exam 2
19	Mon	3/31		nfas	
20	Thu	4/3	8. PolyCheck (and NP)	definition of PolyCheck, including the 2 caveats	HW7
21	Mon	4/7		Equivalence of PolyCheck and Npoly. 3 important PolyCheck problems: SAT, 3-SAT, CircuitSAT.	[HW7]
22	Thu	4/10		polytime reductions. Please start Fortnow reading.	~~HW8~~
23	Mon	4/14	9. The hardest PolyCheck problems (NP-completeness)	definition of NP-completeness. Discussion of P=NP. Please finish Fortnow reading.	HW8
24	Thu	4/17		Cook's theorem. Further examples of NP-complete problems	[HW8]
25	Mon	4/21	10. Historical perspectives Turing, On Computable Numbers (1936); Karp, Reducibility Among Combinatorial Problems (1972)	Turing, sections 1-3. Read Petzold ch4 excerpt.	
26	Thu	4/24		Turing, section 9. Read Petzold ch 11 excerpt.	HW9 -- **no extension**
27	Mon	4/28		Karp 1972. Read Karp excerpt.	
28	Thu	5/1		"Theoretical Foundations" party. 260 Mooreland Ave. 1:30-2:30pm. BYO Turing machine.	
	Tue	5/6	final exam (2pm-5pm)		final exam