

Date	Main topics	Class topic	Suggested reading	Modules	Assignments	Tests
1/9/2023	Introduction					
1/11/2023	Linear algebra review	Complex numbers, vectors, matrices	Nielsen&Chaung 2.1-2.1.3			
1/16/2023	MLK Day					
1/18/2023		Inner products, eigen-vectors, Hermitian operators, tensor product:	2.1.4-2.1.7			
1/23/2023		Matrix operators, commutators	2.1.8-2.1.9			
1/25/2023	DSP basics	Discrete time signals & systems; sampling and reconstruction	Proakis&Manolakis ch1		HW1?	
1/30/2023		Properties of systems, LTI systems	ch2			
2/1/2023		Fourier transforms of discrete time signals	4.2			
2/6/2023		Sinusoids as eigen-functions of LTI systems, filters	5.1, 5.4			
2/8/2023		Spectral estimation	7.4-7.5			
2/13/2023	Test? Spare class?					Quiz1?
2/15/2023	Quantum basics	State spaces, quantum evolution, measurement	NC 2.2.1-2.2.3		HW2?	
2/20/2023		Multi-qubit systems	2.2.8			
2/22/2023		Entanglement, EPR paradox	2.6			
2/27/2023		Deutsch's algorithms and signs of quantum advantage	1.4.3			
3/1/2023	Test? Spare class?					Quiz2?
3/6/2023	Hadamard transforms	Hadamard vs. Fourier transforms			HW3?	Drop deadline
3/8/2023		Finding XOR patterns in data				
3/13/2023	Spring break					
3/15/2023	Spring break					
3/20/2023		Deutsch-Jozsa algorithm	1.4.4			
3/22/2023		Benstein-Vazirani algorithm				
3/27/2023	Spare class? Presentations?				HW4?	
3/29/2023	Quantum Fourier transform	The classical fast Fourier transform				
4/3/2023		Faster quantum opportunities				
4/5/2023		Quantum phase estimation as classical spectral estimation				
4/10/2023		Noisy phase estimation			HW5?	
4/12/2023						
4/17/2023						
4/19/2023					HW6?	
4/24/2023	Review? Presentations?				Final project stuff	
5/1/2023	Final	12-2:30, same room				