

TENTATIVE WEEKLY SCHEDULE FOR PHYS:6723

WK	DATE	TOPIC	Assign
1	T AUG 22	Ch.1 – Thermal radiation; photon statistics	
	Th AUG 24	Ch.1 – Einstein’s Laws of Radiation; Lorentz oscillator and classical dispersion; 2-level atoms	
2	T AUG 29	Ch.1 – Transition cross section and gain; absorption and gain saturation; lasers; 4-level atoms; radiation pressure	
	Th SEP 1	Ch.1 – Semiclassical theory; Einstein coefficients;	
3	T SEP 5	Ch.2 - Fermi’s golden rule; line shape and broadening	
	Th SEP 7	Ch.2 – Optical Bloch equations	
4	T SEP 12	Ch.2 – Rate equations	
	Th SEP 14	Ch.2 – catch up as needed	
5	T SEP 19	First-order coherence (L 3.1 – 3.4; +Fox)	
	Th SEP 21	Second-order coherence (L 3.5, 3.7, 3.8; +Fox)	
6	T SEP 26	Quantization of the EM field (L 4.1 – 4.4)	
	Th SEP 28	Single-mode fields and Quantum Phase (L5.1 -5.2; GK Ch 2)	
7	T OCT 3	Lamb shift & Casimir Effect (GK 2.6 + Fox)	
	Th OCT 5	Coherent states (L 5.3; Ch 5.1 GK Ch 3)	
8	T OCT 10	Atom-Field interactions & Second quantization (L 4.7 – 4.9)	
	Th OCT 12	Midterm Exam	
9	T OCT 17	Jaynes-Cummings Model (L 4.10,4.11 + GK Ch 4)	
	Th OCT 19	Quantum coherence functions (L 4.12 + GK Ch 5)	
10	T OCT 24	Squeezed states (L 5.4 – 5.5)	
	Th OCT 26	Beam splitters and Interferometers (L 5.7 - 5.10, 6.2)	
11	T OCT 31	Multimode light; Bunching & Anti-bunching (L6.3 – 6.5)	
	Th NOV 2	Nonlinear Optics – SPDC / SFWM	
12	T NOV 7	Nonlinear Optics – SPDC / SFWM	
	Th NOV 9	Quantum Nonlinear Optics	
	T NOV 14	Nanophotonics – introduction and double negative materials	
13	Th NOV 16	Nanophotonics – photonic crystals and hyperbolic materials	
14	Fall break		
15	T NOV 28	Nanophotonics – metasurfaces and epsilon near zero	
	Th NOV 30	Local Density of Optics States	
16	T DEC 5	Nanoscale light-matter interactions	
	Th DEC 7	Nanoscale light-matter interactions	
17	Finals Week		