

Spring 2025 – PHYSICS 3034 – R.Sonnenfeld

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SCHEDULE – (Rev. C– 03/24/2025)

wk	Date	Class Topic	Reading Asst.	HW Asst.
1	1/22	[1] Geometric Optics Principal Rays	Ch 2–2.6 (Pedrotti)	
	1/24/25	[2] Lensmaker Equation	Ch 2.7–2.11	
2	1/27	[3] Matrix optics	18.1–18.5 (Ped.)	
	1/29	[4] Matrix optics thick lenses	18.6–18.8	
	1/31	[5] Matrix optics		HW01
3	2/3	[5] Overview, Maxwell in Integral and Diff Form	7.3.1–7.3.3 (Griffiths)	
	2/5	[6] B-field energy, Continuity Eqn \rightarrow Maxwell Disp. Current		
	2/7	[7] Energy Continuity & Poynting's Theorem	8.1.1–8.1.2	HW02
4	2/10	[8] Derive Poynting Th'm, Examples	8.2.1	
	2/12	[9] Mech Waves \rightarrow Wave Eqn, k ω , Waves in 1D	9.1.1–9.1.2	
	2/14	[10] \vec{k} , Complex arithmetic for waves		HW03
5	2/17	[11] 1-D Reflection & Transmission	Ch. 9.1.3–9.1.4	
	2/19	[12] 1-D Ref.Trans., 3-D Plane Waves	9.2.1–9.2.2	
	2/21	[13] Energy and Momentum of EM Plane Waves	9.2.3	
6	2/24	[14] Poynting vector and intensity of plane waves		
	2/26	[15] Test 1	9.3.1	
	2/28	[16] EM waves boundary conditions	9.3.1	
7	3/3	[17] Reflection and Refraction	9.3.2	
	3/5	[18] Snell's Law	9.3.3.	
	3/7	[19] Polarization and Brewster's Angle		HW04
8	3/10	[20] Polarization and Brewster's Angle	9.4.3	
	3/12	[21] Slack		
	3/14	[22] Derive Wave Eqn in Conductors		
*	3/17–21	Spring Break		
10	3/24	[23] Exam Review 9.5.1		HW05
	3/26	[24] Retake Exam	9.5.2	
9.4.1	3/28	[25] R&T in Conductors, B lags E		9.4.2
11	3/31	[26] Dispersion, Electrons on Springs 9.5.1		Report outline
	4/2	[27] Jellium, Derive Cauchy Relation	9.5.2	
	4/4	[28] Dispersion		
12	4/7	[29] Retarded potentials, worked example	10.1.1,2	HW06
	4/9	[30] Intro to Gauges	10.1.3	
	4/11	[31] Coulomb and Lorenz Gauge	10.2.1	
13	4/14	[32] Fields of a moving point charge	10.3.2	
	4/16	[33] Jefimenko Eqns	10.2.2	
	4/18	NO CLASS	Good Friday	

wk	Date	Class Topic	Reading Asst.	HW Asst.
13	4/21	[34] Electric Dipole Radiation	11.1.1	
	4/23	[35] Electric Dipole Radiation	11.1.2	
	4/25	[36] Larmor power formula		Reports
14	4/28	[34] Presentations		
	4/30	[35] Presentations		
	5/2	[36] Presentations		HW07
15	5/5	[37] Take Home Exam		
	5/7	[38] Presentations		
	5/9	[39] Presentations		