

PHY 3101 Schedule (Subject to Change)

Week	Material	Reading Assignment	Homework Assignment	Announcements
#1: Aug. 23	Course Introduction Syllabus, Policies	Chapter 1.1 – 1.5		
	Chapter 1: Relativity I Experimental Basis, Einstein Postulates, Lorentz Transformations, Time Dilation and Length Contraction			
#2: Aug. 30	Chapter 1: Relativity I Doppler Effect	Chapter 1.6, 2.1-2.4	Problem Set 1 Due, Sept. 3	
	Chapter 2: Relativity II Relativistic Momentum, Energy, Mass-Energy Conservation, (Invariant Mass)			
#3: Sept. 6	Chapter 3: Quanta Charge quantization, blackbody radiation, photoelectric effect, X-rays and Compton effect	Chapter 3.1-3.4	Problem Set 2 Due, Sept. 10	Labor Day; No class: Sept. 6;
#4: Sept. 13	Chapter 4: Nuclear Atom Atomic Spectra, Rutherford model, Bohr model, X-ray spectra, (Franck-Hertz experiment)	Chapter 4.1 – 4.6	Problem Set 3 Due, Sept. 17	
#5: Sept. 20	Chapter 5: Particles as Waves de Broglie waves and measurements, wave packets, wave functions, probability	Chapter 5.1-5.5	Problem Set 4 Due, Sept. 24	
#6: Sept. 27	Chapter 5: Particles as Waves uncertainty principle and consequences, wave-particle duality Chapter 6: Schrodinger Equation 1D, infinite square well, finite square well	Chapter 5.6, 5.7, 6.1-6.4	Problem Set 5 Due, Oct. 1	
#7: Oct. 4	Chapter 6: Schrodinger Equation Expectation values and operators, simple harmonic oscillator, reflection and transmission of waves	Chapter 6.5, 6.6, 7.1 – 7.4		Midterm Exam 2: Friday, Oct. 8 Chapters 1-5
	Chapter 7: Atomic Physics 3D Schrodinger equation, quantization of angular momentum and energy			
#8: Oct. 11	Chapter 7: Atomic Physics Hydrogen wave functions, electron spin, total angular momentum, spin-orbit coupling, 2 particle SE, (periodic table), (excited states)	Chapter 7.5-7.8	Problem Set 6 Due, Oct. 15	
#9: Oct. 18	Chapter 8: Statistical Physics Classical statistics, quantum statistics, BEC, (photon and Fermion gas)	Chapter 8.1-8.5	Problem Set 7 Due, Oct. 22	
#10: Oct. 25	Chapter 9: Molecular Structure and Spectra Ionic and covalent bonds, energy levels and spectra of diatomic molecules	Chapter 9.1-9.4	Problem Set 8 Due Oct. 29	

#11: Nov. 1	Chapter 9: Molecular Structure and Spectra Absorption, stimulated emission, and scattering, lasers and masers	Chapter 9.5,9.6	Problem Set 9 Due, Nov. 5	
#12: Nov. 8	Chapter 10: Solid State Physics Structure of solids, classical conduction, free electrons in metals	Chapter 10.1 – 10.3		Midterm Exam 2: Wednesday, Nov. 10 Chapters 6-9
				Homecoming: No class Nov. 12
#13: Nov. 15	Chapter 10: Solid State Physics Kronig-Penney model, magnetism, superconductivity	Chapters 10.5, 10.6, 10.9	Problem Set 10 Due Nov. 19	
#14: Nov. 22	Chapter 11,12: Nuclear Physics, Reactions, and Applications Composition of the nucleus, ground state properties, radioactivity, alpha, beta, gamma decay, nuclear force	Chapter 11.1-11.5, 12.1,12.2		Thanksgiving; No Class: Nov. 26
#15: Nov. 29	Chapter 13: Particle Physics Particles and antiparticles, fundamental interactions and particle classifications, conservation laws and symmetries, standard model and beyond	Chapter 13.1-13.5	Problem Set 12 Due Dec. 3	
#16: Dec. 6	Chapter 14: Astrophysics Sun, Stars, Stellar evolution and demise, cosmology	Chapter 14.1-14.7	Problem Set 13 Due Dec. 10	
December 16	FINAL EXAM (Venue TBA)			