

Physics 107 Course Outline – Fall 2009

WEEK and DATE	CHAPTER, TOPICS and TEXTBOOK SECTIONS	HOMEWORK PROBLEMS	EXAM SCHEDULE
1 Aug. 24	19. Electric Charges, Forces and Fields Charge, insulators, conductors, Coulomb's law, electric field, induced charges, Electric flux, Gauss' law (19.1–19.7)	Assignment #1 Due Sep. 1	
2 Aug. 31	20. Electric Potential & Electric Energy Electric potential and potential energy, energy conservation, potential of point charges, equipotential surfaces, Capacitors, dielectrics, electrical energy storage (20.1–20.6)	Assignment #2 Due Sep. 8	
3 Sep. 7 (Holiday: 7)	21. Electric Current and DC circuits Electric current, resistance, Ohm's law, electric power in circuits, resistors in series & parallel, Kirchoff rules, circuits containing capacitors, RC circuits (21.1–21.7)	Assignment #3 Due Sep. 15	
4 Sep. 14	22. Magnetism Magnetic field, magnetic force on moving charge, motion of charge in magnetic field, magnetic force on a current-carrying wire, torque on current loop (22.1–22.5)	Assignment #4 Due Sep. 22	
5 Sep. 21	Ampere's law, solenoids, magnetism in matter (22.6–22.8) 23. Magnetic Flux & Faraday's Law of Induction EMF, magnetic flux, Faraday's law, Lenz' law (23.1–23.4)	Assignment #5 Due Sep. 29	MID-TERM I Wednesday, Sep. 23 6-8 pm Chapters: 19-22
6 Sep. 28	mechanical work and electrical energy, generators and motors, inductance, RL circuits, energy stored in magnetic field, transformers (23.5–23.10)	Assignment #6 Due Oct. 6	
7 Oct. 5	24. AC Circuits Alternating voltages, capacitors in AC circuits, RC circuits Inductors in AC circuits, LRC circuits, resonance (24.1–24.6) 25. Electromagnetic Waves Generation and propagation of EM waves (25.1–25.2)	Assignment #7 Due Oct. 13	

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8 Oct. 12	EM wave spectrum, Energy and momentum in EM waves, EM wave polarization (25.3–25.5) 26. Geometrical Optics Reflection, images in plane mirror, spherical mirrors (26.1–26.3)	Assignment #8 Due Oct. 20	
9 Oct. 19	ray tracing, refraction lenses, thin-lens equation, dispersion (26.4–26.8) 27. Optical Instruments The human eye, the camera, lenses in combination (27.1–27.2)	Assignment #9 Due Oct. 27	
10 Oct. 26	30. Quantum Physics Blackbody radiation and Planck's hypothesis, photons and photoelectric effect, photons, Compton effect, wave-particle duality (30.1–30.5)	Assignment #10 Due Nov. 3	MID-TERM II Wednesday, Oct. 28 6-8pm Chapters: 22-26
11 Nov. 2	uncertainty principle, quantum tunneling (30.6-30.7) 31. Atomic Physics Early atom models, hydrogen spectrum, Bohr atom, wave picture of Bohr atom (31.1–31.4)	Assignment #11 Due Nov. 10	
12 Nov. 9	quantum mechanics of the Hydrogen atom, multi-electron atoms, periodic table, (31.5–31.6)	Assignment #12 Due Nov. 17	
13 Nov. 16	atomic radiation (31.7) 32. Nuclear Physics and Nuclear Radiation Nuclear structure, radioactivity (32.1-32.2)	Assignment #13 Due Nov. 24	
14 Nov. 23 (Holiday: 26-27)	half-life and radioactive dating, nuclear binding energy, nuclear fission, (32.3–32.5)	Assignment #14 Due Dec. 1	
15 Nov. 30	nuclear fusion, elementary particle physics, open modern physics problems (32.6–32.9)	Assignment #15 Do not hand in the HW	
16 Dec. 7	FINAL EXAM WEEK		FINAL EXAM During final-exam week.