Physics 21

Fall Semester 2024

http://www.lehigh.edu/inphy21/

Time Plan

Wk	Date	Day	Relevant textbook sections, 5th Ed	Topic	HW & Quizzes
1	08/27	Tu	22.1-22.3, **22.4**, **22.5** **23.1, 23.6**	Point charges, electric fields, Coulomb law	
		W			
		Th	**23.1**, 23.2-23.3, 23.6, 23.7	Typical electric fields. Superposition, Continuous charge distribution.	MP1a
		F			Quiz 1 LHW1 narrative
2	09/03	Tu	24.1-24.3, **24.4**, 24.5-24.6	Electric Field, Symmetry, and Gauss law, Conductors.	MP1b
		W			
		Th	**25.1, 25.2**, 25.4-25.5, **25.6,** 25.7,26.1-26.3	Electric potential	MP2a
		F			Quiz 2, LHW1 LHW2 narrative
3	09/10	Tu	29.1-29.2, **29.3,** 29.4 **29.6**	Magnetic field of a moving charge. Simple electric currents. Field lines, Ampère Law.	MP2b
		W			
		Th	**29.4**, 29.5, **29.6**	Magnetic fields and electric currents. Field lines, Ampère Law. Solenoid.	MP3a
		F			Quiz 3, LHW2 LHW3 narrative
4	09/17	Tu	**29.7**, **29.8**,	Magnetic force on moving charges and currents.	MP3b
		W			
		Th	**29.8**, 29.9	Force on current carrying wires, torque on loops, potential energy of a loop, motors	MP4a
		F			Quiz 4, LHW3 LHW4 narrative
4	09/24	Tu	**FIRST HOUR EXAM**		
		W			
		Th	30.1, **30.2**, **30.3**, 30.4	Magnetic flux, Currents created by magnetic fields, Induced voltages	MP4b (delayed)
		F			Quiz 5, LHW4 LHW5 narrative

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6	10/01	Tu	**30.3**, 30.4, **30.5** 30.6. 31.2, 31.3, **31.4**	Faraday Law, Lenz, Eddy currents, General form of Ampére Law. Displacement current.	MP5b
		W			
		Th	31.2, 31.3, 31.4, **31.5**	E and B fields creating each other. Speed of light.	MP6a
		F			Quiz 6, LHW5 LHW6 narrative
7	10/8	Tu	31.1, 31.5, **31.6**.	Electromagnetic waves, Poynting vector. Electrodynamics from different points of view.	MP6b
		W			
		Th	23.5, **26.5**, 26.7, 26.2, 27.5	Capacitors, dielectric constant, Resistors, and electric potential: introduction to circuits	MP7a
		F			Quiz 7, LHW6 LHW7 narrative
8	10/15	Tu	26.5, 26.6, **27.1, 27.2, 27.3,** 27.4 ,28.1, 28.3	Circuits with currents, resistors, and capacitors. Energy in capacitors, Electric power.	MP7b
		W			
		Th	28.2, 28.4, 28.6, **28.7**, 28.8, **30.8**	Kirchhoff rules formalized, Circuit Analysis, Inductors, Energy density of magnetic field	MP8a
		F			Quiz 8, LHW7 LHW8 narrative
9	10/22	Tu	28.9, **30.10, 30.9**	Circuits with switches and time-dependent currents, RC circuits, LR circuits.	MP8b
		W			
		Th	32.2, 32.3, 32.3, **32.5**, **32.6**	AC currents and voltages, root mean square values. filters, principle of transformers	MP9a
		F			Quiz 9, LHW8 LHW9 narrative
10	10/29	Tu	**SECOND HOUR EXAM**		
		W			
		Th	16.1-16.4, 16.5,**17.1**, 17.5.	Waves and how to describe them. Amplitude, phase, frequency, wavelength, wavefronts	MP9b (delayed)
		F			Quiz 10, LHW9 LHW10 narrative
11	11/05	Tu	*Civic Engagement Day*		
		W			
		Th	17.3,33.1, **31.7**,	Light waves, polarization, refractive index, reflection and transmission, refraction.	MP10b (delayed)
		F			Quiz 11, LHW10 LHW11 narrative

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12	11/12	Tu	17.5, 17.6, 17.7, 33.1, **33.2**, 34.2, 34.3,	Reflection and refraction. Superpositon, constructive and destructive interference.	MP11b
		W			
		Th	17.5, 17.6, 17.7, 33.2, **33.3,**	Interference from double and multiple slits, gratings, single slit diffraction	MP12a
		F			Quiz 12, LHW11 LHW12 narrative
13	11/19	Tu	**33.4,** 33.5, 17.6	Single slit diffraction, interference and diffraction patterns, thin film interference	MP12b
		W			
		Th	17.6, 34.1, 34.2, 34.3, 34.4, 34.6	Ray tracing and imaging using mirrors and lenses.	MP13a
		F			Quiz 13, LHW12 LHW13 narrative
14	11/26	Tu	34.6-34.8, 35.1-25.4	Mirrors and lenses, from ray tracing to analytical calculations.	
		W	*Thanksgiving Break*		
		Th			
		F			
15	12/03	Tu	35.5	Summary of physical optics. Review	MP13b
		W			
		Th	35.5 38.3, 38.4	Summary and Review. Electrons through two slits. What's next?	MP14a
		F			LHW13

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