

University Physics - Spring 2012 (revised 01/15/12) - Schneider

Week	Chapters	Topics
01/16-01/20	<i>Chapter 14: Oscillations</i> (Volume 1 of Tipler)	Simple Harmonic Motion, Energy, Oscillating Systems, Damped/Driven, Simple pendulum
	<i>Chapter 15: Wave Motion</i> (Volume 1 of Tipler)	Simple wave motion, periodic waves, Waves in 3D (decibels), Doppler Effect, shock waves (sonic boom)
01/23-01/27	<i>Chapter 15: Wave Motion</i> (continued)	see above
	<i>Chapter 16: Superposition of Standing Waves</i> (Vol1)	Superposition of waves, Standing waves, Harmonic Analysis (fft)
Fri 01/27/12	Test #1 (Chapters 14-16)	* Simple Harmonic Motion (position, velocity, energy) * Standing waves (string/sound) * Traveling waves * Doppler effect (source and observer, one/both moving) * Sound waves (beats, intensity, decibel scale)
01/30-02/03	<i>Chapter 30: Maxwell's Equation and Electromagnetic Waves</i>	Electromagnetic Waves (Sec 30.4 1&2/5)
	<i>Chapter 31: Properties of Light</i>	Speed of light, Reflection/Refraction, Polarization, Light Spectra, Sources of Light

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02/06-02/10	<i>Chapter 32: Optical Images</i>	Plane and Spherical mirrors, Thin Lenses, Optical Instruments (near/far sighted, microscope, telescope, spyglass)
02/13-02/17	<i>Chapter 33: Interference and Diffraction</i>	Phase difference and Coherence, Interference in thin films, Two slit interference,
02/20-02/24	<i>Chapter 33: Interference and Diffraction (continued)</i>	Diffraction of a single slit, Diffraction grating, Phasors (vector kind!)
Fri 02/24/12	Test #2 (Chapters 30-33)	* Polarization (rotated polarizers) * Snell's law (also total internal reflection - can light escape?) * Thin lenses and mirrors (single lens/mirror, calculations, sketches, conceptual questions) * Double lens systems (calculations, conceptual, applications: telescope, microscope, spyglass) * thin film interference (three cases from class) * Double slit/single slit/diffraction grating (finding location of a certain order, missing order?) * multiple slits - 3 or more (interference pattern, effect of increasing the number of slits)
02/27-03/02	<i>Chapter 21: Electric Field I : Discrete charge distributions</i>	Electric charge and Conductors/Insulators, Coulomb's Law, Electric Field
03/05-03/09	<i>Chapter 21 continued</i>	Electric field lines, Motion of charges in Electric Fields, Electric dipoles in electric fields

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Week	Chapters	Topics
03/12-03/17	<i>Spring Break - woo hoo!</i>	
03/19-03/23	Chapter 22: Electric Field II : Continuous charge distributio	Integrating E (finite line, infinite line, ring, disk, plane), Gauss's Law, Calculate E from Gauss's Law (symmetry)
Fri 03/23/12	Test #3 (Chapters 21-22)	* thin film inteference (case 1 and case 2 covered in class) * Net Electric field (E vector) from collection of discrete charges * Electric Field (Ex) graphs - charges on axis * Electric field (E) recipe equations (point, infinite line, ring) * Charged concentric rings (Gauss rings)
03/26-03/30	Chapter 23: Electric Potential	Potential difference, potential due to a system of charges, potential of a continuous charge distribution (ring disk) equipotential surfaces electrostatic
04/02-04/06	Chapter 25: Electric Current and Direct-Current Circuits (Chap 25 first, then Chap 24)	Current and motion of charges, Resistance and Ohm's Law Definition and temp-dependence, Energy in Electric Circuits, Combinations of Resistors, Kirchhoff's Rules voltage multi-loop rules, [Note: The RC portion of Chapter 25 will be done after the Capacitance chapter.]
04/09-04/13	Chapter 24: Electrostatic Energy and Capacitance	Capacitance (general-parallel plate), Storage of Electrical Energy (definition - p. 757 - eq 24-12), Combination of Capacitors, Dielectrics
04/16-04/20	Chapter 25: Electric Current and Direct-Current Circuits (R	RC Circuits
	Chapter 29: Alternating-Current Circuits	AC and a Resistor, AC and Inductors/Capacitors, Phasors (not the Star Trek kind!), LC and RLC - w/o generator, Series RLC w/ generator

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Fri 04/20/12	Test #4 (Chapters 23-26, 29)	*Potential (V scalar) from collection of discrete charges *Electric Potential (V) recipe equations (point, rings) *capacitor/battery circuits - find charges/voltages * resistor/battery circuits - find
04/23-04/27	Chapter 26: The Magnetic Field	Force exerted by Magnetic Field (RHR#1+2), Motion of point charge in magnetic field, Torques on Current loops and Magnets (RHR#3+4), Hall Effect we get to prove the electrons actually are the charge-carriers!
	Chapter 27: Sources of the Magnetic Field	Mag field from moving point charge (RHR#1 again), Biot-Savart Law (RHR5+6), Gauss's Law/ Ampere's Law for Magnetism
04/30-05/04	Chapter 28: Magnetic Induction	Magnetic Flux, Induced EMF and Faraday's law / Lenz's Law, Motional EMF, Eddy Currents, Inductance, Energy
	Chapter 27: Magnetism in Matter	Magnetism in Matter (Ferromagnetism, hysteresis curve, magnetically soft vs hard materials)
	Chapter 29: Alternating-Current Circuits	AC Generators, Transformers (the physics kind)

10AM Univ2 Honors - Final Exam - Tues May 8th, 2012 - 10:30am-12:30pm - S223

1PM Univ2 - Final Exam - Wed May 9th, 2012 - 1:00pm-3:00pm - S221