

**WINTHROP UNIVERSITY**  
**PHYS 212 Course Syllabus**  
**Department of Chemistry, Physics, Geology and the Environment**

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Day of the week	Date	Chapters	Topics	Assignments
Mon	Jan 8	17.1-17.4	Temperature: Atomic theory of matter, temperature, thermal equilibrium; 0 <sup>th</sup> Law of thermodynamics	
Wed	Jan 10	19.1-19.3	Heat as Energy transfer, Internal Energy, specific heat	
Fri	Jan 12	19.4-19.7	Calorimetry, Latent heat, 1 <sup>st</sup> Law of thermodynamics	
Wed	Jan 17	21.1-21.4	Static Electricity; Electric Charge Electric Charge in the Atom –Insulators and Conductors Induced Charge	<b>HW 1</b>
Fri	Jan 19	21.5-21.7	Coulomb's Law –The Electric Field Calculations for Continuous Charge Distributions –	<b>Quiz 1</b>
Monday	Jan 22	21.8-21.9	Field Lines, Electric Fields and Conductors	
Wed	Jan 24	21.10-21.11	Motion of a Charged Particle in an Electric Field – Electric Dipoles	<b>HW2</b>
Fri	Jan 26	22.1-22.4	Electric Flux, Gauss Law, applications of Gauss Law	<b>Quiz 2</b>
Mon	Jan 29	23.1-23.4	Electric Potential Energy and Potential Difference-Relation between Electric Potential and Electric Field –Electric Potential Due to Point Charges	
Wed	Jan 31	23.5-23.7	Equipotential Surfaces –Electric Dipole Potential – E Determined from V	<b>No Homework</b>
<b>Fri</b>	<b>Feb 2</b>		<b>Exam 1</b>	
Mon	Feb 5	23.8	Electrostatic Potential Energy; the Electron Volt-Cathode Ray Tube: TV and Computer	
Wed	Feb 7	24.1-24.2	Capacitors –Determination of Capacitance Capacitors in Series and Parallel –	
Fri	Feb 9	24.3-24.5	Electric Energy Storage –Dielectrics	<b>Quiz 3</b>
Mon	Feb 12	25.1-25.3	The Electric Battery –Electric Current –Ohm's Law Resistance and Resistors	
Wed	Feb 14	25.4-25.6	Resistivity –Electric Power-Power in Household Circuits	<b>HW 3</b>
Fri	Feb 16	25.7-25.9	Alternating Current Microscopic View of Electric Current: Current Density and Drift Velocity	<b>Quiz 4</b>
Mon	Feb 19	26.1-26.3	EMF and Terminal Voltage-Resistors in Series and in Parallel-Kirchoff's Rules	

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Wed	Feb 21	26.4-26.7	EMFs in Series and in Parallel; Charging a Battery, Circuits Containing Resistor and Capacitor (RC Circuits)-Electric Hazards	<b>HW 4</b>
Fri	Feb 23	27.1-27.3	Magnets and Magnetic Fields-Electric Currents Produce Magnetic Fields, Definition of <b>B</b>	<b>Quiz 5</b>
Mon	Feb 26	27.4-27.6	Force on an Electric Charge Moving in a Magnetic Field; Torque on a Current Loop; Magnetic Dipole Moment	
Wed	Feb 28	27.7-27.8	Loud Speakers, Discovery and Properties of the Electron- The Hall Effect	<b>No Homework</b>
<b>Fri</b>	<b>March 1</b>		<b>Exam 2</b>	<b>No quiz</b>
Mon	March 4	28.1-28.3	Magnetic Field Due to a Straight Wire- Force between Two Parallel Wires- Definitions of the Ampere and the Coulomb-	
Wed	March 6	28.4-28.6	Ampere's Law; Magnetic Field of a Solenoid and a Toroid	
Fri	March 8	28.8-29.2	Magnetic materials-Ferromagnetism Solenoids- Induced EMF- Faraday's Law of Induction; Lenz's Law	<b>Quiz 6</b>
Mon	March 18	29.3-29.6	EMF Induced in a Moving Conductor- Electric Generators Back-EMF and Counter Torque; Transformers and Transmission of Power	
Wed	March 20	29.7-29.9	A Changing Magnetic Flux Produces an Electric Field-Applications of Induction: Sound Systems, Computer Memory, Seismograph	<b>HW5</b>
Fri	March 22	30.1-30.3	Mutual Inductance- Self-Inductance-Energy Stored in a Magnetic Field	<b>Quiz 7</b>
Mon	March 25	30.4-30.8	LR Circuits, LC Circuits and Electromagnetic Oscillations- LC Oscillations with Resistance (LRC Circuit)-AC Circuits with AC Source-LRC Series AC Circuit	
Wed	March 27	31.1-31.3	Changing Electric Fields Produce Magnetic Fields; Ampere's Law and Displacement	<b>HW6</b>
Fri	March 29	31.4-31.5	Gauss's Law for Magnetism- Maxwell's Equations-Production of Electromagnetic Waves	<b>Quiz 8</b>
Mon	April 1	32.1-32.2	Light as an Electromagnetic Wave. The Ray Model of Light-Reflection; Image formation by a Plane Mirror	
Wed	April 3	32.2-32.4	Image Formation of Images by Spherical Mirrors, Index of refraction	<b>No Homework</b>
<b>Fri</b>	<b>April 5</b>		<b>Exam 3</b>	

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Mon	April 8	32.5-32.7	Refraction: Snell's Law -Visible Spectrum and Dispersion, Total Internal Reflection	
Wed	April 10	33.1-34.3	Ray Tracing-The Thin Lens Equation; Magnification-Combinations of Lenses-	<b>HW7</b>
Fri	April 12	33.4-35-8	Lens maker's Equation, Magnifying Glass, Telescopes	<b>Quiz 9</b>
Mon	April 15	34.1-34.3	Waves Versus Particles; - Huygens' Principle and the Law of Refraction,	
Wed	April 17	34.4-34.5	Intensity in the double slit- Interference in Thin Films;	<b>HW8</b>
Fri	April 19	35.1-35.3	Diffraction by a single slit Interference, intensity of single slit. Diffraction in Double-Slit Experiment-	<b>Quiz 10</b>
Mon	April 22	35.4-35.8	Limits of resolution, Diffraction grating, Spectrometer, x-rays and x-ray diffraction	
<b>Th</b>	<b>April 25</b>		<b>Final Exam – 8:00 am</b>	