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

Day of the week	Date	Chapters	Topics	Assignments
Mon	Jan 12	17.1-17.4	Temperature: Atomic theory of matter, temperature, thermal equilibrium; 0^{th} Law of thermodynamics	
Wed	Jan 14	19.1-19.3	Heat as Energy transfer, Internal Energy, specific heat	
Fri	Jan 16	19.4-19.7	Calorimetry, Latent heat, 1^{st} Law of thermodynamics	
Wed	Jan 21	21.1-21.4	Static Electricity; Electric Charge Electric Charge in the Atom –Insulators and Conductors Induced Charge	**HW 1**
Fri	Jan 23	21.5-21.7	Coulomb's Law –The Electric Field Calculations for Continuous Charge Distributions –	**Quiz 1**
Monday	Jan 26	21.8-21.9	Field Lines, Electric Fields and Conductors	
Wed	Jan 28	21.10-21.11	Motion of a Charged Particle in an Electric Field – Electric Dipoles	**HW2**
Fri	Jan 30	22.1-22.4	Electric Flux, Gauss Law, applications of Gauss Law	**Quiz 2**
Mon	Feb 2	23.1-23.4	Electric Potential Energy and Potential Difference-Relation between Electric Potential and Electric Field –Electric Potential Due to Point Charges	
Wed	Feb 3	23.5-23.7	Equipotential Surfaces –Electric Dipole Potential – E Determined from V	**No Homework**
Fri	**Feb 6**		**Exam 1**	
Mon	Feb 9	23.8	Electrostatic Potential Energy; the Electron Volt-Cathode Ray Tube: TV and Computer	
Wed	Feb 11	24.1-24.2	Capacitors –Determination of Capacitance Capacitors in Series and Parallel –	
Fri	Feb 13	24.3-24.5	Electric Energy Storage –Dielectrics	**Quiz 3**
Mon	Feb 16	25.1-25.3	The Electric Battery –Electric Current –Ohm's Law Resistance and Resistors	
Wed	Feb 18	25.4-25.6	Resistivity –Electric Power-Power in Household Circuits	**HW 3**
Fri	Feb 20	25.7-25.9	Alternating Current Microscopic View of Electric Current: Current Density and Drift Velocity	**Quiz 4**
Mon	Feb 23	26.1-26.3	EMF and Terminal Voltage-Resistors in Series and in Parallel-Kirchoff's Rules	

Wed	Feb 25	26.4-26.7	EMFs in Series and in Parallel; Charging a Battery, Circuits Containing Resistor and Capacitor (RC Circuits)-Electric Hazards	**HW 4**
Fri	Feb 27	27.1-27.3	Magnets and Magnetic Fields-Electric Currents Produce Magnetic Fields, Definition of **B**	**Quiz 5**
Mon	March 2	27.4-27.6	Force on an Electric Charge Moving in a Magnetic Field; Torque on a Current Loop; Magnetic Dipole Moment	
Wed	March 4	27.7-27.8	Loud Speakers, Discovery and Properties of the Electron- The Hall Effect	**No Homework**
Fri	**March 6**		**Exam 2**	**No quiz**
Mon	March 9	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 11	28.4-28.6	Ampere's Law; Magnetic Field of a Solenoid and a Toroid	
Fri	March 13	28.8-29.2	Magnetic materials–Ferromagnetism Solenoids-Induced EMF- Faraday's Law of Induction; Lenz's Law	**Quiz 6**
Mon	March 23	29.3-29.6	EMF Induced in a Moving Conductor- Electric Generators Back-EMF and Counter Torque; Transformers and Transmission of Power	
Wed	March 25	29.7-29.9	A Changing Magnetic Flux Produces an Electric Field-Applications of Induction: Sound Systems, Computer Memory, Seismograph	**HW5**
Fri	March 27	30.1-30.3	Mutual Inductance- Self-Inductance-Energy Stored in a Magnetic Field	**Quiz 7**
Mon	March 30	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	April 1	31.1-31.3	Changing Electric Fields Produce Magnetic Fields; Ampere's Law and Displacement	**HW6**
Fri	April 3	31.4-31.5	Gauss's Law for Magnetism- Maxwell's Equations-Production of Electromagnetic Waves	**Quiz 8**
Mon	April 6	32.1-32.2	Light as an Electromagnetic Wave. The Ray Model of Light-Reflection; Image formation by a Plane Mirror	
Wed	April 8	32.2-32.4	Image Formation of Images by Spherical Mirrors, Index of refraction	**No Homework**
Fri	**April 10**		**Exam 3**	
Mon	April 13	32.5-32.7	Refraction: Snell's Law -Visible Spectrum and Dispersion, Total Internal Reflection	

Wed	April 15	33.1-34.3	Ray Tracing-The Thin Lens Equation; Magnification-Combinations of Lenses-	**HW7**
Fri	April 17	33.4-35-8	Lens maker's Equation, Magnifying Glass, Telescopes	**Quiz 9**
Mon	April 20	34.1-34.3	Waves Versus Particles; - Huygens' Principle and the Law of Refraction,	
Wed	April 22	34.4-34.5	Intensity in the double slit- Interference in Thin Films; Diffraction by a single slit Interference, intensity of single slit.	**No Homework**
Fri	April 24	35.1-35.3	**Exam 4**	**No quiz**
Mon	April 27	35.4-35.8	Diffraction by a Double-Slit Experiment Limits of resolution, Diffraction grating, Spectrometer, x-rays and x-ray diffraction	