A Correlation of
College Physics:
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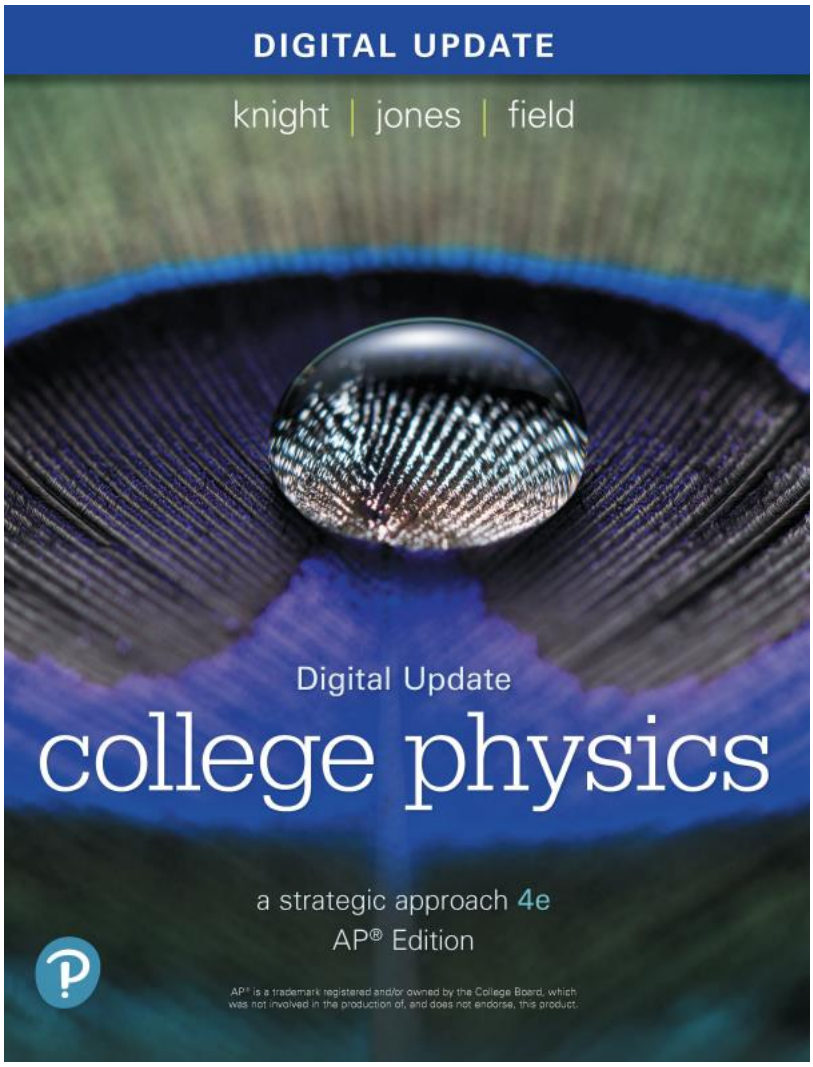

To the
AP® Physics 2 Course Framework
Effective Fall 2024

Pearson

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The units above reflect the College Board's AP® Physics 2 Course Framework.

Unit 9: Thermodynamics (6 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
9.1 Kinetic Theory of Temperature and Pressure	9.1.A Describe the pressure a gas exerts on its container in terms of atomic motion within that gas. 9.1.B Describe the temperature of a system in terms of the atomic motion within that system.	11.3 Temperature, Thermal Energy, and Heat 12.2 The Atomic Model of an Ideal Gas
9.2 The Ideal Gas Law	9.2.A Describe the properties of an ideal gas.	12.1 The Atomic Model of Matter 12.3 Ideal-Gas Processes
9.3 Thermal Energy Transfer and Equilibrium	9.3.A Describe the transfer of energy between two systems in thermal contact due to temperature differences of those two systems.	11.4 The First Law of Thermodynamics 12.8 Heat Transfer
9.4 The First Law of Thermodynamics	9.4.A Describe the internal energy of a system. 9.4.B Describe the behavior of a system using thermodynamic processes.	11.4 The First Law of Thermodynamics
9.5 Specific Heat and Thermal Conductivity	9.5.A Describe the energy required to change the temperature of an object by a certain amount. 9.5.B Describe the rate at which energy is transferred by conduction through a given material.	12.5 Specific Heat and Heat of Transformation 12.6 Calorimetry 12.8 Heat Transfer

9.6 Entropy and the Second Law of Thermodynamics	9.6.A Describe the change in entropy for a given system over time.	11.7 Entropy and the Second Law of Thermodynamics
Unit 10: Electric Force, Field, and Potential (7 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
10.1 Electric Charge and Electric Force	10.1.A Describe the electric force that results from the interactions between charged objects or systems. 10.1.B Describe the electric and gravitational forces that result from interactions between charged objects with mass. 10.1.C Describe the electric permittivity of a material or medium.	20.1 Charges and Forces 20.2 Charges, Atoms, and Molecules 20.3 Coulomb's Law
10.2 Conservation of Electric Charge and the Process of Charging	10.2.A Describe the behavior of a system using conservation of charge.	20.1 Charges and Forces 20.2 Charges, Atoms, and Molecules
10.3 Electric Fields	10.3.A Describe the electric field produced by a charged object or configuration of point charges. 10.3.B Describe the electric field generated by charged conductors or insulators.	20.4 The Concept of the Electric Field 20.5 The Electric Field of Multiple Charges 20.6 Conductors and Electric Fields 20.7 Forces and Torques in Electric Fields

10.4 Electric Potential Energy	10.4.A Describe the electric potential energy of a system.	21.1 Electric Potential Energy and Electric Potential

Unit 10: Electric Force, Field, and Potential (7 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
10.5 Electric Potential	10.5.A Describe the electric potential due to a configuration of charged objects. 10.5.B Describe the relationship between electric potential and electric field.	21.1 Electric Potential Energy and Electric Potential 21.3 Electric Potential and Conservation of Energy 21.4 Calculating the Electric Potential 21.5 Connecting Potential and Field
10.6 Capacitors	10.6.A Describe the physical properties of a parallel-plate capacitor.	21.7 Capacitance and Capacitors 21.8 Energy and Capacitors
10.7 Conservation of Electric Energy	10.7.A Describe changes in energy in a system due to a difference in electric potential between two locations.	21.1 Electric Potential Energy and Electric Potential 21.3 Electric Potential and Conservation of Energy

Unit 11: Electric Circuits (8 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
11.1 Electric Current	11.1.A Describe the movement of electric charges through a medium.	22.1 A Model of Current 22.2 Defining and Describing Current 22.3 Batteries and emf
11.2 Simple Circuits	11.2.A Describe the behavior of a circuit.	22.5 Ohm's Law and Resistor Circuits 23.1 Circuit Elements and Diagrams
11.3 Resistance, Resistivity, and Ohm's Law	11.3.A Describe the resistance of an object using physical properties of that object. 11.3.B Describe the electrical characteristics of elements of a circuit.	22.4 Connecting Potential and Current 22.5 Ohm's Law and Resistor Circuits
11.4 Electric Power	11.4.A Describe the transfer of energy into, out of, or within an electric circuit, in terms of power.	22.6 Energy and Power
11.5 Compound Direct Current (DC) Circuits	11.5.A Describe the equivalent resistance of multiple resistors connected in a circuit.	21.2 Sources of Electric Potential 23.3 Series and Parallel Circuits 23.4 Measuring Voltage and Current 23.5 More Complex Circuits

	11.5.B Describe a circuit with resistive wires and a battery with internal resistance. 11.5.C Describe the measurement of current and potential difference in a circuit.	
11.6 Kirchhoff's Loop Rule	11.6.A Describe a circuit or elements of a circuit by applying Kirchhoff's loop rule.	23.2 Kirchhoff's Laws
Unit 11: Electric Circuits (8 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
11.7 Kirchhoff's Junction Rule	11.7.A Describe a circuit or elements of a circuit by applying Kirchhoff's junction rule.	22.2 Defining and Describing Current 23.2 Kirchhoff's Laws
11.8 Resistor-Capacitor (RC) Circuits	11.8.A Describe the equivalent capacitance of multiple capacitors. 11.8.B Describe the behavior of a circuit containing combinations of resistors and capacitors.	23.6 Capacitors in Parallel and Series 23.7 RC Circuits

Unit 12: Magnetism and Electromagnetism (4 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
12.1 Magnetic Fields	12.1.A Describe the properties of a magnetic field. 12.1.B Describe the magnetic behavior of a material as a result of the configuration of magnetic dipoles in the material. 12.1.C Describe the magnetic permeability of a material.	24.1 Magnetism 24.2 The Magnetic Field 24.8 Magnets and Magnetic Materials
12.2 Magnetism and Moving Charges	12.2.A Describe the magnetic field produced by moving charged objects. 12.2.B Describe the force exerted on moving	24.5 Magnetic Fields Exert Forces on Moving Charges

	charged objects by a magnetic field.	
12.3 Magnetism and Current-Carrying Wires	12.3.A Describe the magnetic field produced by a current-carrying wire. 12.3.B Describe the force exerted on a current-carrying wire by a magnetic field.	24.3 Electric Currents Also Create Magnetic Fields 24.4 Calculating the Magnetic Field Due to a Current 24.6 Magnetic Fields Exert Forces on Currents
12.4 Electromagnetic Induction and Faraday's Law	12.4.A Describe the induced electric potential difference resulting from a change in magnetic flux.	25.1 Induced Currents 25.2 Motional emf 25.3 Magnetic Flux and Lenz's Law 25.4 Faraday's Law

Unit 13: Geometric Optics (4 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
13.1 Reflection	13.1.A Describe light as a ray. 13.1.B Describe the reflection of light from a surface.	18.1 The Ray Model of Light 18.2 Reflection
13.2 Images Formed by Mirrors	13.2.A Describe the image formed by a mirror.	18.6 Image Formation with Spherical Mirrors 18.7 The Thin-Lens Equation
13.3 Refraction	13.3.A Describe the refraction of light between two media.	17.1 What Is Light? 18.3 Refraction
13.4 Images Formed by Lenses	13.4.A Describe the image formed by a lens.	18.4 Image Formation by Refraction 18.5 Thin Lenses: Ray Tracing 18.7 The Thin-Lens Equation

Unit 14: Waves, Sound, and Physical Optics (9 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
14.1 Properties of Wave Pulses and Waves	14.1.A Describe the physical properties of waves and wave pulses.	15.1 The Wave Model 15.2 Traveling Waves 25.5 Electromagnetic Waves
14.2 Periodic Waves	14.2.A Describe the physical properties of a periodic wave.	15.3 Graphical and Mathematical Descriptions of Waves
14.3 Boundary Behavior of Waves and Polarization	14.3.A Describe the interaction between a wave and a boundary.	15.5 Energy and Intensity 25.5 Electromagnetic Waves
14.4 Electromagnetic Waves	14.4.A Describe the properties of an electromagnetic wave.	15.4 Sound and Light Waves 25.5 Electromagnetic Waves 25.7 The Electromagnetic Spectrum

14.5 The Doppler Effect	14.5.A Describe the properties of a wave based on the relative motion between the source of the wave and the observer of the wave.	15.7 The Doppler Effect and Shock Waves
14.6 Wave Interference and Standing Waves	14.6.A Describe the net disturbance that occurs when two or more wave pulses or waves overlap. 14.6.B Describe the properties of a standing wave.	16.1 The Principle of Superposition 16.2 Standing Waves 16.3 Standing Waves on a String 16.4 Standing Sound Waves 16.6 The Interference of Waves from Two Sources 16.7 Beats
14.7 Diffraction	14.7.A Describe the behavior of a wave and the diffraction pattern resulting from a wave passing through a single opening.	17.1 What Is Light? 17.5 Single-Slit Diffraction 17.6 Circular-Aperture Diffraction

Unit 14: Waves, Sound, and Physical Optics (9 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
14.8 Double-Slit Interference and Diffraction Gratings	14.8.A Describe the behavior of a wave and the diffraction pattern resulting from the wave passing through multiple openings.	17.2 The Interference of Light 17.3 The Diffraction Grating
14.9 Thin-Film Interference	14.9.A Describe the behavior of light that interacts with a thin film.	17.4 Thin-Film Interference

Unit 15: Modern Physics (8 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
15.1 Quantum Theory and Wave-Particle Duality	15.1.A Describe the properties and behavior of an object that exhibits both particle-like and wave-like behavior.	17.1 What Is Light? 25.6 The Photon Model of Electromagnetic Waves 28.3 Photons 28.4 Matter Waves 28.5 Energy Is Quantized 28.8 Applications and Implications of Quantum Theory
15.2 The Bohr Model of Atomic Structure	15.2.A Describe the properties of an atom.	28.6 Energy Levels and Quantum Jumps 29.2 Atoms 29.3 Bohr's Model of Atomic Quantization 29.4 The Bohr Hydrogen Atom

15.3 Emission and Absorption Spectra	15.3.A Describe the emission or absorption of photons by atoms.	29.1 Spectroscopy
15.4 Blackbody Radiation	15.4.A Describe the electromagnetic radiation emitted by an object due to its temperature.	(none)
15.5 The Photoelectric Effect	15.5.A Describe an interaction between photons and matter using the photoelectric effect.	28.2 The Photoelectric Effect
15.6 Compton Scattering	15.6.A Describe the interaction between photons and matter using Compton scattering.	(none)

Unit 15: Modern Physics (8 topics) AP® Physics 2 Course Framework		
Topic	**Learning Objectives**	**College Physics: A Strategic Approach Chapters and Sections**
15.7 Fission, Fusion, and Nuclear Decay	15.7.A Describe the physical properties that constrain the behavior of interacting nuclei, subatomic particles, and nucleons. 15.7.B Describe the radioactive decay of a given sample of material consisting of a finite number of nuclei.	30.1 Nuclear Structure 30.2 Nuclear Stability 30.3 Forces and Energy in the Nucleus 30.5 Nuclear Decay and Half-Lives

15.8 Types of Radioactive Decay	15.8.A Describe the processes by which individual nuclei decay.	30.4 Radiation and Radioactivity