

## AP Physics C Scope & Sequence

Days	Unit	Standard(s)/Outcome(s)	Essential/Guiding Questions
23	<p><b>Unit 1: Electrostatics</b>  <i>You'll begin your study of the electric force with an exploration of electric charges.</i></p>	<p><b><u>BIG IDEAS:</u></b></p> <ul style="list-style-type: none"> <li>● Force Interactions</li> <li>● Fields</li> <li>● Conservation</li> </ul> <p><b><u>SCIENCE PRACTICES:</u></b></p> <ul style="list-style-type: none"> <li>● Visual Representations</li> <li>● Representing Data and Phenomena</li> <li>● Data Analysis</li> <li>● Theoretical Relationships</li> <li>● Mathematical Routines</li> <li>● Argumentation</li> </ul>	<p>Why does your hair stand up after brushing it with a plastic comb?</p> <p>How does a charged rubber rod bend a stream of water?</p> <p>How is the kinematics of charged particles used in old televisions?</p> <p>Why is it sometimes necessary to shield against electric fields?</p> <p>How are maps of voltage and topographical maps related?</p> <p>Why can a bird land on a high voltage wire and not be electrocuted?</p>
12	<p><b>Unit 2: Conductors, Capacitors, Dielectrics</b>  <i>You'll explore how electric charge can move through an</i></p>	<p><b><u>BIG IDEAS:</u></b></p> <ul style="list-style-type: none"> <li>● Force Interactions</li> <li>● Fields</li> <li>● Conservation</li> </ul> <p><b><u>SCIENCE PRACTICES:</u></b></p> <ul style="list-style-type: none"> <li>● Visual Representations</li> </ul>	<p>Why is the electric potential in the conductor connecting two resistors in series constant?</p> <p>Why is the electric field everywhere perpendicular to</p>

	<i>object and the factors that affect the way charge moves.</i>	<ul style="list-style-type: none"> <li>● Question and Method</li> <li>● Representing Data and Phenomena</li> <li>● Theoretical Relationships</li> <li>● Mathematical Routines</li> <li>● Argumentation</li> </ul>	<p>surfaces of constant electric potential?</p> <p>Why does water in a microwave oven become warm while aluminum foil sparks?</p> <p>Why are capacitors used as circuit elements shaped like cylinders?</p>
16	<p><b>Unit 3: Electric Circuits</b></p> <p><i>You'll build on your knowledge of electrical components to investigate the nature of electric circuits and explore current, resistance, and power.</i></p>	<p><b><u>BIG IDEAS:</u></b></p> <ul style="list-style-type: none"> <li>● Fields</li> <li>● Conservation</li> </ul> <p><b><u>SCIENCE PRACTICES:</u></b></p> <ul style="list-style-type: none"> <li>● Visual Representations</li> <li>● Question and Method</li> <li>● Representing Data and Phenomena</li> <li>● Data Analysis</li> <li>● Mathematical Routines</li> <li>● Argumentation</li> </ul>	<p>How does the wiring design for a house allow for electricity to still be on in some rooms when others have none due to a circuit breaker being flipped?</p> <p>Why do warming light bulbs take several minutes to shine bright?</p> <p>Why doesn't the electric company charge for electrons used?</p> <p>How does touching a conductor to a capacitor before removing it from a circuit protect you?</p>
16	<p><b>Unit 4: Magnetic Fields</b></p> <p><i>You'll begin your exploration of</i></p>	<p><b><u>BIG IDEAS:</u></b></p> <ul style="list-style-type: none"> <li>● Change</li> <li>● Fields</li> <li>● Conservation</li> </ul>	<p>Why are large-scale, charged-particle accelerators in the shape of a circle?</p>

	<p><i>magnetism by learning how magnetic fields are generated, how they behave, and how they relate to electricity.</i></p>	<p><b>SCIENCE PRACTICES:</b></p> <ul style="list-style-type: none"> <li>● Question and Method</li> <li>● Representing Data and Phenomena</li> <li>● Theoretical Relationships</li> <li>● Mathematical Routines</li> <li>● Argumentation</li> </ul>	<p>How does a guitar pick up work?</p> <p>Why does a current deflect the needle of a compass?</p> <p>Why does the deflection of a pair of parallel conducting wires depend on the directions of current in the wires?</p>
13	<p><b>Unit 5:</b>  <b>Electromagnetism</b>  <i>You'll build on what you've learned about charges, currents, and electric and magnetic fields to explore electromagnetic forces and their properties.</i></p>	<p><b>BIG IDEAS:</b></p> <ul style="list-style-type: none"> <li>● Force Interactions</li> <li>● Fields</li> <li>● Conservation</li> </ul> <p><b>SCIENCE PRACTICES:</b></p> <ul style="list-style-type: none"> <li>● Visual Representations</li> <li>● Data Analysis</li> <li>● Theoretical Relationships</li> <li>● Mathematical Routines</li> <li>● Argumentation</li> </ul>	<p>How does an electric motor work?</p> <p>How does pushing the button at the door produce a sound inside the house?</p> <p>How does an antenna work?</p> <p>How does the digital recording in your MP3 player generate sound waves in your headphones?</p> <p>How does Wi-Fi work?</p>