


Physics Curriculum Bundle # 10

Title		Suggested Dates
Electrostatics		3/22 – 4/16 (19 days)

Big Idea/Enduring Understanding	Guiding Questions
Objects can become electrostatically charged by the processes of conduction and induction. Electrostatic charges produce electric fields & forces.	How do electrostatic charges interact?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	Specificity & Examples	Suggested Resources (Read the note above)
3 Uses critical thinking and scientific problem solving to make informed decisions. 3D Describe connection between physics and future careers.	Such as <ul style="list-style-type: none"> • Engineering • Medical technology • Sports 	
6 The student knows forces in nature. 6B Research and describe the historical development of the concepts of gravitational, electrical, and magnetic force.	Including <ul style="list-style-type: none"> • Trace the historical progression of thought regarding gravity. <ul style="list-style-type: none"> ○ Newton ○ Cavendish ○ Einstein • Trace the history of our understanding of electricity and magnetism. <ul style="list-style-type: none"> ○ Coulomb ○ Faraday ○ Maxwell 	History of Physics Website – http://web.mit.edu/redingtn/www/netadv/hist.html
6 The student knows forces in nature. 6C Identify and analyze the influences of charge and distance on electric forces.	Including <ul style="list-style-type: none"> • Solve problems involving Coulomb’s law. • Solve electric field intensity problems. • Describe charging by induction. • Quantify charge as integer multiple of elementary charges. • Explain electric potential difference. • Describe the properties of electric fields. 	Types of charges & Coulomb’s Law Lab – using scotch tape. (phys_9_ScotchTapeLab) Nature of Charges – using pith balls & rods. (phys_9_ChargePithBallRods) Electric Field Mapping – using equipotential lines. (phys_9_EFieldMapping)

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	<ul style="list-style-type: none"> • Describe the effects of electric fields on charges. • Describe electric fields in conductors. 	<p>Electric Field Mapping Physlet – http://www.its.caltech.edu/~phys1/java/phys1/EField/EField.html</p> <p>Electric Field Hockey Physlet – http://phet.colorado.edu/simulations/sims.php?sim=Electric_Field_Hockey</p>
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>3E Research and describe the history of physics and contributions of scientists.</p>	<p>Including</p> <ul style="list-style-type: none"> • Electricity/Magnetism (Franklin, Coulomb, Faraday, Ohm, Ampere, Oerstad) 	<p>History of Physics Website – http://web.mit.edu/redingtn/www/netadv/hist.html</p> <p>Suggested Equipment – electroscope, rubber rod, glass rod, wool, fur, balloons, pith balls, Van De Graaf generator, Wimshurst generator, conductive paper, multimeter.</p> <p>Franklin’s description of his kite experiment – (phys_10_franklin_letterXI)</p> <p>Franklin’s description of experiments with Leyden jars and capacitors – (phys_10_franklin_letterIV)</p> <p>Henry’s descriptions of experiments in electromagnetic induction (phys_10_henry_articleIX) (phys_10_henry_appendix)</p>