Science
Physics
Unit 7: Electrostatics

Essential Understandings	▪ Causation: Nothing "just happens." Everything is caused. ▪ Interrelatedness: Everything in the universe is connected to everything else in the universe. ▪ Dynamism: Everything is changing in some way all the time. ▪ Entropy: Change has direction. Generally, simple precedes complex. Generally, order changes toward disorder. ▪ Uniformitarianism: The way the universe works today is the way it worked yesterday and the way it will work tomorrow.
Essential Questions	▪ How is electric charge transferred between objects? ▪ Why is electric charge conserved? ▪ How do capacitors store and release large amounts of electric charge? ▪ How is electric force defined and calculated?
Essential Knowledge	▪ Electric charge is conserved. ▪ Electrical force provides a push or a pull on electric charges. ▪ Electric fields interact with electric charges without making physical contact. ▪ Charges of opposite natures have equal magnitudes.
Vocabulary	▪ <u>Terms</u>: ○ capacitor, charge, conductor, conservation of charge, Coulomb, Coulomb's Law, electric field, electric potential, electric potential energy, electrical force, electrically, polarized, electrostatics, grounding, induced, induction, insulator, semiconductor, superconductor, volt, voltage
Essential Skills	▪ Use mathematics to calculate electric field strength. ▪ Use mathematics to calculate electrical force between electric charges. ▪ Analyze interactions between like charges and opposite charges. ▪ Determine the direction and magnitude of an electric field.
Related Maine Learning Results	<u>Science and Technology</u> D. The Physical Setting D4.Force and Motion Students understand that the laws of force and motion are the same across the universe. c. Describe the relationship between electric and magnetic fields and forces, and give examples of how this relationship is used in modern technologies.
Sample Lessons And Activities	▪ Word problem worksheets ▪ Electrostatics labs ▪ Lectures ▪ Electrostatics demonstrations ▪ Electrostatics videos
Sample Classroom	▪ Chapter tests ▪ quizzes

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Assessment Methods	▪ Laboratory reports
Sample Resources	▪ Publications: o Physical Science - Glencoe o MARVEL Data bases o GALE Resource Data bases ▪ Videos: o The Mechanical Universe