

# 05: Electricity & Magnetism

Content Area: **Special Education**

Course(s):

Time Period: **Full Year**

Length: **4 weeks**

Status: **Published**

## **General Overview, Course Description or Course Philosophy**

---

Physical Science establishes a basic approach to the fundamentals of chemistry and physics. The following concepts will be explored: atomic structure, chemical bonding, chemical reactions, the periodic table, kinetic theory, and kinematics. The use of technology to gather and analyze data will be incorporated. This course is concept-oriented with a focus on Chemistry and Physics in the real world. Laboratory work and special projects will facilitate active learning and accommodate different learning styles.

## **OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS**

---

- Electricity is a form of energy that can be transformed by moving electric charges doing work in various devices
- Electric fields provide the force that moves charged particles
- A potential difference has to be maintained in order to move charges between two points.
- Magnetic fields are produced around moving charges. A changing magnetic field can induce a current in a closed conductor

## **CONTENT AREA STANDARDS**

---

SCI.HS-PS3-5	Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.
SCI.HS-PS2-5	Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.
SCI.HS-PS2-4	Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.

## **RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)**

---

TECH.9.4.12.CI.2

Identify career pathways that highlight personal talents, skills, and abilities (e.g.,

	1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).
TECH.9.4.12.CT.2	Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a).
TECH.9.4.12.CT.3	Enlist input from a variety of stakeholders (e.g., community members, experts in the field) to design a service learning activity that addresses a local or global issue (e.g., environmental justice).
TECH.9.4.12.CT.4	Participate in online strategy and planning sessions for course-based, school-based, or other project and determine the strategies that contribute to effective outcomes.

## **INTERDISCIPLINARY CONNECTIONS**

---

Algebra, Chemistry, ELA/Literacy

## **EVIDENCE OF LEARNING**

---

Refer to the 'Formative Assessments' and 'Summative Assessments' sections.

### **Formative Assessments**

---

- Checks for understanding during lesson
- Online feedback (CK-12)
- Do Now activities.
- Student-centered questioning and discussion that is facilitated by instructor.
- Exit Tickets.

### **Summative Assessments**

---

- Benchmarks – departmental benchmark given at the end of MP1, MP2, and MP3
- Alternative Assessments
  - Lab inquiries and investigations
  - Lab Practicals

- Exploratory activities based on phenomenon
- Gallery walks of student work
- Creative Extension Projects
- Build a model of a proposed solution
- Let students design their own flashcards to test each other
- Keynote presentations made by students on a topic
- Portfolio

### **RESOURCES (Instructional, Supplemental, Intervention Materials)**

---

[physicsclassroom.com](http://physicsclassroom.com)

[Vernier.com/experiments](http://Vernier.com/experiments)

Khan Academy, Crash Course Physics, and Bozeman Science

### **ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS**

---

See link to Accommodations & Modifications document in course folder.