

# 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**

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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**

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Students will understand that:

- 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**

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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)**

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CRP 2 Apply appropriate academic and technical skills.

CRP 4 Communicate clearly and effectively and with reason.

CRP 5 Consider the environmental, social and economic impacts of decisions.

CRP 6 Demonstrate creativity and innovation.

CRP 8 Utilize critical thinking to make sense of problems and persevere in solving them.

CRP 11 Use technology to enhance productivity.

## **Student Learning Targets**

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Refer to Declarative and Procedural Knowledge

## **Declarative Knowledge**

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Students will understand:

## **Procedural Knowledge**

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Students will be able to:

## **EVIDENCE OF LEARNING**

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

## **Formative Assessments**

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Observation, do now, homework

## **Summative Assessments**

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- 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)**

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

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

Khan Academy, Crash Course Physics, and Bozeman Science

### **INTERDISCIPLINARY CONNECTIONS**

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Algebra, Chemistry, English

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

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See link to Accommodations & Modifications document in course folder.