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

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

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.
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-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.

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

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

Refer to Declarative and Procedural Knowledge

Declarative Knowledge

Students will understand:

Procedural Knowledge

Students will be able to:

EVIDENCE OF LEARNING

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

Formative Assessments

Observation, do now, homework

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
Vernier.com/experiments
Khan Academy, Crash Course Physics, and Bozeman Science

INTERDISCIPLINARY CONNECTIONS

Algebra, Chemistry, English

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.