Physics: Spark! (Electricity and Magnetism)
Syllabus

Students continue their study of physics and explore the phenomena of electricity and magnetism. Through a review of atoms and charged particles, students will examine static electricity and the properties of attraction and repulsion. The class will explore conductors and insulators in simple electric circuits. Students will experiment with circuits in series and parallel including basic circuit notation. Students will discover the relationship between electricity and magnetism, magnetic fields and materials, and the strength of magnets.

Each class begins with a brief lesson, demonstrations, and includes one or more hands-on activities, labs, or experiments to illustrate the day's concepts. Course themes include: structure of an atom, positive/negative charged particles, attraction/repulsion, simple circuits, circuit diagrams, types of circuits, electric fields, conductors, insulators, magnets, and magnetic fields.

Week 1: Atoms and Introduction
- Review the structure of an atom
- What is electricity?
- How objects become positively and negatively charged

Week 2: Static Electricity
- How objects become positively and negatively charged
- How can objects be charged
- Attraction and repulsion
- Making an electrophorus

Week 3: Introduction to Circuits
- Introduction to circuits
- Circuit symbols and diagrams
- Parts of a circuits

Week 4: Types of Circuits
- Series circuit
- Parallel circuit
- Short circuit
- Electric fields

Week 5: Conductors and Insulators
- Identifying good conductors
- Making a light bulb
- Relationship between mechanical and electrical energy

Week 6: Properties of Magnets
- Materials attracted to magnets
- Strength of magnets

Week 7: Magnetic Forces and Fields
- Properties of magnetic fields
- Plotting magnetic fields

Week 8: Magnetism and Electricity

- Relationship between electricity and magnetism
- Electromagnets