Science Explorers Course Outlines
For grades 1-3 and 4-6

## Winter 2012 session details
## Grades 1-3

Topic: Shockingly Electric
Location: Science room; Wednesday 2:50-3:50 pm

Course outline:
Week 1: Static electricity: Making and using an electroscope; Van De Graff generators
Week 2: Electrochemistry. Make batteries.
Week 3: Electromagnetism: Turning motion into electricity; detecting electricity using galvanoscopes; solenoids and motors. Make a simple electromagnetic generator.
Week 4: Exploring conductivity. Conductors v/s resistors. Insulators
Week 5: Current electricity and circuits. Create a simple circuit
Week 6: Sculpting circuits
Week 7: Converting energy into electricity: Solar power
Week 8: Converting energy into electricity: Wind power

## Spring 2012 session details
## Grades 1-3

Topic: TBD

## Winter 2012 session details
## Grades 4-6

Topic: Break, Make and Take (BMT)-8 weeks
Max enrollment: 14 students. Location: Rm. 31-***COVINGTON school only**
Day and time: Wednesday 2:45-3:45 pm

Course outline:
Week 1: What is reverse engineering? What does the inside of a toy look like? Can you put the toy back together?
Week 2: Basic circuits, switches and symbols. Make flashlights.
Week 3: Experiment with electricity and light bulbs
Week 4: Electromagnetism: make galvanoscopes. make electromagnets
Week 5: Inductors and Solenoids: make a solenoid launcher
Week 6: Motors: turning electricity and magnets into motion; build something with a vibrating motor
Week 7: Phone and speakers: using electricity to transmit sound; make a speaker
Week 8: Circuit boards and computers: Study circuit boards and identify parts. Take apart computers (possibly a printer). Make a resistor, charge a capacitor etc.

*Safety in using tools and handling materials will be paramount.* ***We will require each parent and student to read and sign a safety contract before starting class. We recommend students enroll for all 16 weeks (both sessions) and will give priority to those who do.***

*Besides what is mentioned above, each week, students will also take apart different electronic and mechanical items such as phones, cameras, CD players, vacuum cleaners, computers etc, and study the design, layout, different parts that make up the gadget and analyze how/why the parts work together.*

*We may further modify the content based on the feedback we get from students after week 1 or 2 and of course it will also depend on our teacher's evaluation of the class. Your feedback, as always, will be appreciated.*

***4-6th graders from Santa Rita are welcome to register for classes at Covington school**

## Spring 2012 session details
## Grades 4-6

Topic: Boarder-zone (bread boarding and soldering)-8 weeks
Max enrollment: 14 students. Location: Rm. 31-***COVINGTON school only**
Day and time: Wednesday 2:45-3:45 pm

Course outline:
Week 1: Reading schematics, "breadboard" circuits-learn the origin of breadboards before moving onto modern breadboards.
Week 2: Using a modern breadboard-transistors, resistors and potentiometers
Week 3: Soldering practice; make an art sculpture or stained glass hanger. Learn about integrated circuits, digital electronics, microcontrollers, motors. Desoldering random electronics.
Week 4: More soldering practice: connecting parts, jumper wires etc
Week 5: Soldering practice project: use kits
Week 6: Design and breadboard a junkbot
Weeks 7 and 8: Solder and finish the junkbot

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