Summer Physics

Exploratorium Scavenger Hunt

Big Idea

The main point of this project is as follows: many of you have been to the Exploratorium before, but how has your viewpoint & understanding *changed* as a result of taking physics? How does it look different than it looked before?

Work product

You will produce a written document (parts can be hand-written, just be neat) that includes for each exhibit you visit:

- a photo of you and your teammates next to that particular exhibit
- a very brief (one to two sentence) summary of the exhibit (*note*: do not simply copy down information provided at or by the Exploratorium – recast & write in your own words and relate the material to what you've learned in this class. Visit plagiarism.org if you have any questions about avoiding plagiarism.)
- *Optional*: a written exam problem – appropriate in level, depth, and style to the exams we've taken in class – that is inspired by the exhibit in question (see rubric below – note that the words 'inspired by' allow for creative & broad interpretation).

Quantity vs. quality

Everybody learns in a different way. Some folks like to see as many exhibits as possible with just a cursory look at each, and others like to spend more time on fewer exhibits, getting a deeper understanding. Both of these strategies are acceptable. Rewards will be offered to the best projects in each of these categories.

Rubric

PASS

- Student has visited and detailed (with photos) at least one exhibit in each unit of the second semester of the course.
- Student has visited and summarized at least two exhibits that are NOT listed on this document, but that *relate* to specific units in this semester.
- Student has **EITHER** produced high-quality, exam-worthy problems inspired by at least one exhibit in each of the six units of the second semester (**depth**) **OR** has visited & written short summaries (with photos) for as many as possible of the exhibits listed on the next page (**breadth**)
- Student was on-task throughout the visit to the Exploratorium, was doing his/her best to enjoy him/herself and learn a lot of physics. Student did not make use of the Exploratorium docents (tour guides) when locating exhibits, instead finding everything on his/her own.

FAIL

- Student failed to meet one or more of the items listed above under PASS.
- Student behaved poorly at the Exploratorium. All SI school rules apply.

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Exhibits

Note: exhibits vary from time to time; not every one of these is necessarily available on any given day. Do your best to find what you can. Let me know in your report if there were any missing exhibits.

Electrostatics

Charge & Carry, Giant Electroscope, Plusses & Minuses, Inverse Square Law

Electric Circuits

Circuit Workbench, Energy vs. Power, Jacob's Ladder, Finger Tickler

Magnetism

Magnet + Electricity = Motor, Pedal Generator, Generator Effect, Magnetic Suction, Color TV & Magnetism, Strange Attractor, Magnetic Clouds, Magnetic Tightrope

Fluids & Thermo

Gas Model, Water Standing on Air, Molecular Buffeting (both the model & the real thing!), How a Steam Engine Works, Fog Chamber

Sound & Waves

Pendulum Station, Standing Waves, Hot Spot, Oscylinderscope, Pipes of Pan, Lissajous Rods, Kettle Drum, Resonator, Pendulum Snake, See a Sound Wave, Shape the Soundscape, Catch the Sound

Optics & Modern

Spherical mirror, Cloud Chamber, and a variety of activities within the Seeing exhibit

1st Semester Material

Gravity's Rainbow, Gravity Powered Calculator, Falling Feather, Sailboat Race, Turntable, Water Spinner, Particle Accelerator, Satellite Orbit Simulator, Lunar Lander, Bouncing Ball

Your Own Discoveries...