

WACKY OR REAL
or
HOW THINGS WORK - PH399
FALL TERM 2007

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Office Hours: Monday 11-12:00 and by appointment, room 128 SB2

How things work.... dump: the real name should be:
Wacky or real? Physics perceptions in the everyday world.

This is a unique, one of a kind physics course designed to enhance scientific thinking about the physical world.

For whom? "Seekers of the truth," individuals with an "open" mind, science and non-science majors, and especially future teachers.

Goals:

1. to develop an understanding of what science really is and understand how the scientific process actually works and how it's trickier than you think
2. Learn physics (see the physics areas below), and apply it to your knowledge of science and the scientific process in the real world

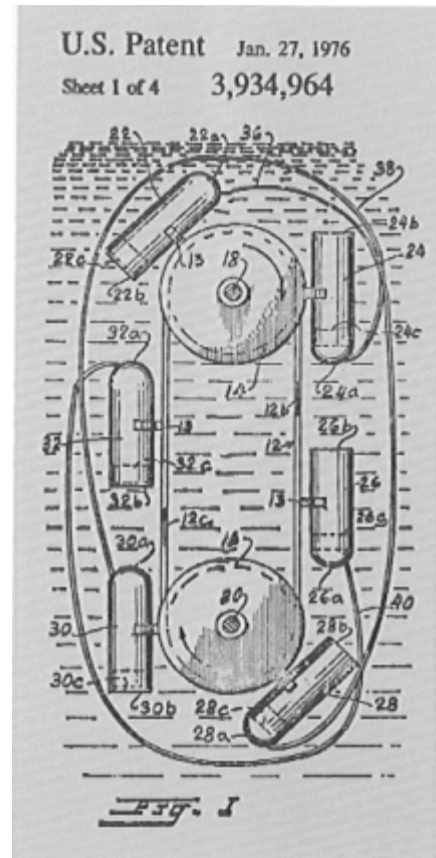
The class will:

1. utilize extensive demonstrations, magic, and ire-inducing discussions, i.e., we all know we are all descendants of Vega (Vegans)
2. have no labs
3. not require a calculator
4. have no traditional homework, hence no problem like the following (plagiarized):

"In his short story "A Slight Case of Sunstroke", Arthur C. Clarke writes of a stadium full of disgruntled soccer fans barbecuing the dishonest referee by reflecting sunlight on him with mirrors found under their seats.

"a. Imagine a stadium at the equator at noon (i.e. the sun's directly overhead), with 10,000 fans (about the capacity of PGE Park). Assuming that sunlight delivers about 1000 watts per square meter to the surface of the Earth, and that each fan is holding a 0.25 m^2 mirror at 450, how much power would be available to be projected onto a dishonest referee?

"b. To be humane, let's replace the referee with a 50 kg cylinder of water. Assuming this cylinder absorbs all of the reflected light from the mirror - wielding fans, how long will it take for him to reach 100°C or 212°F ? (The heat capacity of water is about 4200 J/kg/K).



Tentative schedule

date	Class #	Topics
9/27	1	Overview
10/4	2	Sound, hi-fi
10/11	3	Thermodynamics, entropy
10/18	4	Light I
10/25	5	Light II
11/1	6	Nuclear physics
11/8	7	Mechanics, rockets
11/15	8	Electricity and magnetism I
11/22		Holiday
11/29	9	Electricity and magnetism II
12/6	Final	1930-2120

Grading

Participation/attendance	25%	Weekly noted
Homework	25%	Due when assigned
Final exam	25%	December 6, 2007
Quizzes	25%	Worst one will be dropped

Required reading: Voodoo Science by Robert Park, handouts as provided.