PH102 Lab 1: A crash course in research papers

> "You can know the name of a bird in all the languages of the world, but when you're finished, you'll know absolutely nothing whatever about the bird... So let's look at the bird and see what it's doing – that's what counts. I learned very early the difference between knowing the name of something and knowing something." - R.P. Feynman

And so it is with physics. You can calculate things and copy formulas all day long, but that doesn't mean you know anything. Developing an understanding of how things work on a fundamental level and honing your intuition are crucial components of a proper scientific education. To this end, you will be researching a recent scientific development that has received attention in the popular press, and you will write a short (2 page) paper based on this research. **This is a group activity.**

First and foremost, you must evaluate the reliability of the information and claims made based on your knowledge of physics, critically assess the utility of the development, and explain both to a lay-audience. Further, you must state the relevance of this development to your major or chosen profession, this class, and the general public. For this paper, you will choose your own topic and (online) source. This could be a popular science article in a magazine, an extended newspaper article, a popular science site, or even a journal article from your field of study.

The source material and topic is up to you, **but your topic and source must be briefly approved by the instructors.** So long as the topic and source are deemed appropriate, it is fair game - be creative. You need not necessarily choose a source from the categories below, but you must make a compelling (and short) verbal case. If you are unable to find compelling sources, the instructors will assist you in your selection. **Example sources could include, but are not limited to:**

- Magazine Articles: Scientific American; Popular Science; Discover; New Scientist

- Newspaper Articles: New York Times science specials

- Explanatory sites: a decent-length Wikipedia article; "how stuff works"

- Journals: Nature journals; Science; any well-respected journal in your field

You must write, as a group, a short paper discussing your source of choice. **It is due by the end of the second laboratory period, Thursday 10 July 2008.** Submission may be either by hard copy, or electronically via email (pleclair@ua.edu - include "ph102 paper" in the subject along with your group member's *full* names). **Your paper must adhere to the following basic requirements:**

- Two double-spaced 8.5 x 11 inch pages, single sided

- Font size no larger than 12pt

- Margins no greater than 1.5 inches (3.8 cm)

- Submitted in hard or soft copy

- Source must be approved by instructors

The content of this paper is somewhat open. The overall learning goals of the paper to recognize key scientific concepts, relate these key concepts to the world around you, discriminate between reliable and less reliable information given in your source, and critically evaluate the information using the scientific method.

More concretely, you must touch on the following, related to all group members:

- what you learned from your source

- are there ideas which are, in your opinion, more or less tenable based on the evidence provided?

- how the material relates to what you have learned in PH101[1]

- how it may or may not be relevant to your major field of study

- how it explains aspects of everyday phenomena around you

You will be graded according to:

- whether the length requirement has been met

- whether you addressed the points above

- your overall description of the source material

- the quality and appropriateness of the source material

- the quality of your narrative and ease of written communication

You can use diagrams and pictures, so long as they are essential to your arguments and do not take away from the required two pages of text.

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[1] Failing that, chemistry and biology courses. Other courses are negotiable.