Questionnaire for ISP213H, spring 2008

For 5 extra credit points (a quiz, or nearly a journal), please thoughtfully fill out this detailed review.

This course is unlike anything taught anywhere in the country that I’m aware of—I suspect that you’ve never taken anything like it. I have many simultaneous goals in ISP213H:

- I want to present the historical development of physics in a non-textbook fashion (physics textbooks are strictly topical and a-historical). By this, I mean following the progression of ideas respecting historical contexts. The emphasis is on the way in which physics changes and progresses.
- I try to sneak some focused physics content—how some things actually work and what constitute current problems in research.
- I try to give you a sense of how people have tried to make sense of science as a knowledge-generating activity and how it’s similar to and different from other ways of generating knowledge—Philosophy of Science.
- While physics for non-scientists with minimal mathematics is a standard offering, I have tried to include enough mathematics to try to give a sense of the essence of a defining part of this subject. This necessarily sometimes involves hinting at complex mathematics without actually doing complex mathematics. I do this in order to give a sense of how professional mathematics can be very different from academic mathematics as taught. Teaching physics without this lacks something important…or so I continue to believe.
- I try to give an historical context to the physics and that’s partly why I take side trips into art. First, art helps to provide a time-marker. Second, art too has undergone progressive abstraction over relevant historical periods, and it, like science, sometimes changes in revolutionary ways. That’s interesting to me and I thought that maybe it might be interesting to you too.
- Finally, the profession that I know is practiced by people. Like most intensely focused professionals devoted to any endeavor, their lives are often interesting. I’d like for you to have a sense of that, since some of them are pretty amazing. But, I also hope you appreciate that scientists are usually pretty regular folks.

This has been an enormous amount of work and so I’d like to know whether I’ve approximated my goals. I’ve made many adjustments in the past 5 years based on what your predecessors have said: you’re the best measure of how I might better handle this monster if I teach it again. Because of the idiosyncratic nature of ISP213H, when I stop doing it…it stops with me¹. As you know, my elected responsibilities in the American Physical Society will keep me out of teaching for a couple of years.

Please fill this out, staple it :), and bring it to the final exam. Once there, remove the cover sheet and put it into a separate pile so I’ll know you did it. I’ll not know who you are unless you choose to tell me.

¹ I’ll be developing a “regular” ISP course which will study the two deeply related subjects of elementary particle physics and astrophysics/cosmology. Eventually, when that’s ready to go, I suspect that I will alternate it with ISP213H, so this will no longer be an annual course.
A. Expectations and outcomes.

1. Why did you take the course again?

2. Did the course meet your expectations? If so, why and if not, why not?

3. This is an honors course and as such it’s supposed to be a significant amount of work. Please characterize the relative amount of work in this course compared to other honors courses you have had, or are taking.

4. Are you officially in the honors college?
5. What is your year in school?

B. Content

The plan of this course is an intellectual history of physics. Please be specific:

1. What eras/sections/topics worked and which didn’t work and why?

2. Did you learn any physics?
2. **The art.** I continue to think that similarities between the development of art and physics are interesting enough to try to marry them…or at least to get them to date ;-) The overall goal is to get you to think about the bigger picture of what it means to represent the world, but also to attach an historical context to the physics. Did this work? If so, why? If not, why not?

Should I continue to develop this? Or drop the art in favor of just physics?

3. **IM** I think I have "conversations" with some of you that probably wouldn’t have happened face to face (or before 1AM!). Has this helped?
4. What about the web site? Have Cast, Ideas/Expts been helpful? What should I add to the web site to help?

C. Presentation

1. This is advertised as a lecture course. What did you like about the presentation? (Please comment on: lectures, readings, slides in class, slides on web, demonstrations)

2. What did you dislike and why?
D. Projects, etc
I intentionally try to find lots of ways for people to demonstrate knowledge (and learn some physics) rather than just 2 exams or a paper.

1. Comment on the projects, exams, quizzes, etc.

2. Any ideas for what I might do in addition, or instead of what was assigned?

3. I'm considering some possible changes in projects/readings. I would like your opinion on each:

   *I still think that the enormously expensive (as new) March book is the best thing since sliced bread. What do you think?*

   Should I change anything about the projects? Please be specific. What might I add? What should I drop?
In previous years, I’ve required the biography to be a two-person web project. Would you have liked that? We taught people how to make web sites.

4. The Journal. I confess that reading these things is more work than I imagined…both Danielle and I have read every word you’ve written and collaborated on the grade assignment. However, I think that I know a class as individuals with this device better than I ever have before, and have a much better sense of how you’re doing.

Has preparing the Journal been a positive thing or a negative thing for you? Why?

Previous classes have asked for the journal to be worth a considerable part of the grade, and this time I did that. What do you think about the relative work-grade balance for this? Is there anything about this exercise that I should change? Should I get rid of it altogether?
5. **Point allocation.** What did you think about the point allocation and why:

- bio

- journal

- quizzes

- midterm

- final

- book/movies

- instructor, participation, etc

**E. Mathematics.**
I’m particularly frustrated at the lack of mathematics believing that something important about the subject is missing if there is not enough appreciation for mathematical argument.

1. I continue to think that understanding an algebraic argument conveys a part of understanding in physics that just cannot be done in words. I’m not sure that I’m doing this in the best way, however. General comments?
Please comment specifically on the following ways in which I've experimented in this:

1. The silly “processor thingy” that specified assumptions, inputs, and results of a calculation.

2. Generally, what is your level of comfort with the mathematics that I used.

3. The lectures themselves with math explicitly done.

3. If uncomfortable, what would fix that?
4. Should I ratchet up the mathematical rigor? Should I assign problems, and consequently do problems in class?

5. Should I ratchet up the prerequisites? Require physics? Require calculus?

F. General comments

1. Do you have any overall comments, suggestions on how I can make this a better experience?

2. Here’s where the rubber meets the road: would you recommend this course to a friend? Or…to a bitter enemy. Why?