Physics 7320

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The grader is Charlie Stahl (`Charles.Stahl@colorado.edu`).

The class meets MWF 1:25 to 2:15 in Duane G125.

Office hours Wednesday –2:15-4 or 5 (depending on whether there's a colloquium at 4) and Thursday–1 to 5, plus other times when you can find me.

Grade:

- homework 250
- midterm 100
- final 150
- total 500 points

The midterm will be in the evening, 1 1/2 hours long, in mid March. The final is Monday 6 May, 4:30-7 in our classroom.

Homework will typically be given out on Wednesdays, due Fridays 10 days later. The questions will also be posted on

- `http://www-hep.colorado.edu/~degrand/p7320.html`

The grader will probably be marking papers over the weekend and I will want to post solutions at some reasonable time after the Friday deadline, so keep to a schedule and negotiate with me IN ADVANCE if you feel you have to turn in something late. Otherwise, we may not take late homework. Homework solutions will be scanned onto the course web page, as usual.

Text: Jackson, "Classical electrodynamics."

Books I like and will try to put on reserve in the Math-Physics library include

- Landau and Lifshitz, "Classical theory of fields"
- Landau and Lifshitz, "Electrodynamics of continuous media"
- Ryder, "Quantum Field Theory" – very useful when we start doing classical relativistic field theory. The book seems rather plain when you first open it, but the discussion of its topics are usually quite clear.
- Low, "Classical Field Theory"
- Born and Wolfe, "Optics" – a remarkable book. It dates from the late 50's, but has been frequently updated. Its discussion of diffraction is fairly complete and is a good contrast to Jackson's. It's not an easy read.

- Thorne and Blandford, "Modern Classical Physics." A sprawling and somewhat unfocussed treatment of the parts of classical physics which the authors (a general relativist and an astrophysicist) are interested in. The parts of the book that will make good backup reading for 7320 are chapter 2 (special relativity) and chapters 8-9 (diffraction and related topics). You could spend years working through all 1500 pages!

Also, I put links on the web page to four items

- "How light interacts with matter," by V. F. Weisskopf. This is nontechnical but very deep. It's worth reading twice: once at the start of the term and then after we have finished the radiation section of the course.
- My sophomore-level special relativity notes. We will do special relativity at a much higher level than these notes, but they might be a good refresher. The genesis was that about ten years ago I taught our sophomore modern physics course and realized that I did not understand anything which was written in the elementary texts I read (even though I use relativity in my research). So I wrote up what I thought was important.
- I also put a link to Einstein's original 1905 article.
- There is a link to my graduate quantum mechanics notes. If I end up talking about the quantum electromagnetic field, this is as close as I can get to what I will say. See Ch. 14. Ch. 12, semiclassical radiation theory, might also be useful.

Finally, if you qualify for accommodations because of a disability, see me as soon as possible but before the second week of class.