Sept. 14, 2003

Physics 900- Acing the GRE

Instructor: H. J. Frisch; HEP320; 702-7479

Meeting Times and Room Assignments:

Tues 5:30-6:30, KPTC 103- class and discussion
Sat 10:30-noon HEP 323 (HEP conference room)- practice exam

Disclaimers:

1. This is not an official course of the Physics Dept, but is offered by Professor Frisch as a service to UC Physics and math majors applying to graduate school in Physics.
2. The offering of this course is not an endorsement of the GRE— quite the contrary. The goal is to completely undermine the test by getting a perfect score. With luck and some hard work, we can eliminate the use of the test at UC (and perhaps elsewhere) in due time.

Brief Description:

The GRE Physics exam is used heavily by some Physics departments in the admissions process, despite being a multiple-choice exam that emphasizes speed and test-taking techniques over basic physics knowledge and the ability to derive results systematically. Chicago students (and, anecdotally, Harvard students too) tend to do poorly on the test, as the testing is antithetical to the more thoughtful techniques of problem solving and understanding we teach. This course is intended to enable you to get a score of over 900 on the test. A month's study at the Resnick and Halliday level along with relearning techniques for speed and 'answer-driven problem solving', with the help of practice exams, should be sufficient. We will also discuss some topics of value: estimating, dimensional analysis, mnemonics for formulae, and limit-taking of simple formulae. Lest you think getting 990 is unrealistic, I note that the only two American applicants with 990 several years ago came from the same small college with a heavy emphasis on GRE preparation.

Texts:

Halliday, Walker and Resnick, *Fundamentals of Physics*
Ohanion, *Physics*
Fishbane/Gasiorowicz/Thornton *Physics for Scientists and Engineers*
and other such first-year comprehensive tomes
Reif *Fundamentals of Statistical and Thermal Physics*
Leighton *Principles of Modern Physics*
Eisberg and Resnick *Quantum Physics*

Links:

http://www.brynmawr.edu/Acads/Physics/NAbraham/mentoring.html
(the next-to-last paragraph ('Let me also...') should be required reading by all physics chairs and faculty.)
http://www.pha.jhu.edu/groups/sps/grad/physicsgre.html
http://www.sciencemag.org/cgi/content/full/274/5288/710
http://www.grinnell.edu/academic/physics/resources/gre/
http://www.pha.jhu.edu/groups/sps/grad/gradgre.html

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Exams: 1 Practice/exam per week; 1 final exam (Nov. 8, 2003)

Score Reporting:
You will be asked to report the result of your preassessment exam and the real GRE score. The correlation of names with scores will be will be kept confidential.

Proposed Calendar

Week 1
Sept. 30 Tues Introduction, formation of study groups, discussion of outline, topics; assignments of research into exam.

Oct. 4 Sat 1st Practice Exam

Week 2
Oct. 7 Tues Mechanics, Thermo and Stat Mech

Oct. 11 Sat 2nd Practice Exam

Week 3
Oct. 14 Tues E and M

Oct. 18 Sat 3rd Practice Exam

Week 4
Oct. 21 Tues QM

Oct. 25 Sat 4th Practice Exam

Week 5
Oct. 28 Tues - Special relativity, High Energy physics, other areas from past exams.

Week 6
Nov. 4 Tues Summary, Collective Girding of Loins
Nov. 8 GRE is given- if you don't get over 900 you will have to study more and take it again!