PHYS 250 – Special Relativity

An Introduction to Special Relativity – A self-paced course designed around the second edition of *Spacetime Physics: Introduction to Special Relativity* by Edwin F. Taylor and John Archibald Wheeler. This course is a prerequisite to PHYS 350 – *Introduction to General Relativity*.

What is a self-paced course?

A self-paced course is one in which you work independently of the instructor to complete a particular unit. A typical unit is designed around a chapter in the text. In order to finish a unit, you must pass a quiz testing your competence of the material in that unit. To complete the course, you have to finish a certain number of units. The final grade is determined by the number of units passed.

What are the roles of the student and teacher in a self-paced course?

There is a set of instructions for each unit which are designed to help you master the material in that unit. The teacher acts as a facilitator and is available to help when you find yourself at an impasse. In lieu of class lectures, which typically entail a one way flow of information from teacher to student, the meetings between teacher and student in a self-paced course are more conversational. You come in prepared to discuss a particular problem or topic and have done enough independent work before the meeting to engage with the teacher in meaningful dialogue. The teacher’s role is to encourage and help you move through the units at a reasonable pace. Your goal is to complete the units in a timely fashion and, as a bonus, learn how to become a better independent learner.

Suggestions for Problem Solving

In order to get the most benefit from doing the various exercises and problems, I suggest that you try to solve each problem WITHOUT looking back at the material in the unit. The best way of making this part of your problem solving toolkit is to make a copy of the assigned problems at the start of each unit. Then when it comes time to solve those problems, make sure the material in the unit or text is not at hand. If you discover that you cannot do one or more of the problems, it implies that you did not do a careful enough job working through the unit.
Grading for this Course

This course consists of 11 units. Your final grade depends on the number of units passed by Friday, December 13, 2013: 11 units for an A, 10 units for a B, and 9 units for a C. If you have passed 8 units, you will have the option of accepting a grade of D or receiving an incomplete and finishing the 9th unit before the start of the spring semester. Incompletes can only be used to turn a possible D into a C.

Unfortunately, if you have completed less than 8 units by the end of the semester, you have earned an F.

The last day to drop a class during the fall semester is Friday, November 1, 2013. If you have not completed 5 units by Wednesday of that week, October 30, 2013, you will be administratively dropped from the class. This will be done for your own good, since if you are this far behind, your chances of successfully completing the course by the end of the semester are slim to none!

Unit 1 – Spacetime
Unit 2 – Floating Free
Unit 3 – Same Laws for All
Unit 4 – Lorentz Transformation
Unit 5 – Interlude: The Faraway Observer
Unit 6 – Trip to Canopus
Unit 7 – Trekking Through Spacetime
Unit 8 – Regions of Spacetime
Unit 9 – Momenergy
Unit 10 – Collide. Create. Annihilate
Unit 11 – Gravity: Curved Spacetime in Action