

MATH 89 - SPRING 2012

Course Info:

MATH 89 - An Introduction to the Theory of Special Relativity:
Spring 2012 - Section 001

Time/Place:

TuTh: 2:00 PM - 3:30 PM, Phillips Hall 228

Instructor:

Jeremy Louis Marzuola

Contact Info:

E-mail: marzuola@math.unc.edu

Office: Room 324-D Phillips Hall

Office Hours: TuTh: 10:00 AM-11:30 AM

Course Description:

The course will cover:

- Signals and reference frames, the Doppler effect, and absolute vs. relative Motion.
- Historical views leading up to Einstein.
- Measuring the speed of light.
- Thought experiments and abstract description of implications of special relativity.
- Lorentz coordinates, light cones and a mathematical derivation of special relativity.
- The equivalence of mass and energy.
- Interaction of geometry and physics.

Prerequisites:

There are no prerequisites for the course and all math should be self-contained.

Recommended Course Texts:

G. GAMOW, *Mr. Thompkins Universe*.

B. GREENE, *The Fabric of the Cosmos*.

M. GARDINER, *Special Relativity made easy*.

A.P. FRENCH, *Special Relativity*.

E.A. ABBOTT, *Flatland/Sphereland*.

Grading:

The course will be graded on weekly reading assignments, online forum postings and class participation (25%), a written project (25%), one in class quiz (25% each) and a final presentation (25%).

Homework Assignments:

Each class period there will be an assigned reading to be discussed in the next class. Participation will be determined by having one required question posted to the class forum prior to the class period. No late assignments will be accepted.

Projects and Presentations:

For the project, choose a topic from the course and use any medium you choose to illustrate it, be it mathematics, art, music, video, or other. The presentation part of the grade will be based on a 10 minute presentation of your project to your classmates and up to 5 minutes of being able to answer questions on the material.

Exams:

The quiz will be in class on March 3rd, 2012. The final presentations will occur at the standard schedule time according to the University Registrar Schedule, which is Wednesday, May 9th, 2012 at 12:00 PM.

Honor Code Statement and Course Policies:

It is expected that each student will conduct themselves within the guidelines of the UNC Honor System. Upon entering class, all cell phones should be turned off. Exams will be closed book and without calculators. Please put all cell phones and calculators away before coming to class for any exam.

Make-up and Absentee Policy:

Attendance at every class is strongly encouraged as it will be necessary for participation grades to be given in full. Missed in-class exams can be made up only if a written medical/coach excuse is provided showing you were unable to attend. No changes are permitted for the final exam without appeal to the Dean.