

Lesson Outline

Teacher Name Mark Nemchick

School McKeesport Area High School

Course Title Physics II

Topic/Unit Relativity/Time Dilation

Model Topic Time Dilation

Modeling Tool Excel

Please provide a brief description for each section.

1. Describe the preparation you will do with the students prior to the model.

Prior to introduction of the tool, the class will have discussed and manipulated the Lorentz equations for relativity.

2. Describe the learning objectives related to the model and how you will achieve them.

The faster an object travels the slower time passes and time itself becomes dependant on velocity. With slower speeds time is not does not vary. By using the excel tool the student can see how time for one observer varies with velocity.

3. Describe the discussion questions you will use after the model.

What happens to the difference in time when the velocity increases or decreases?

Describe the type of relationship between a moving “clock” and a stationary “clock”.

What happens to time when the velocity reaches the speed of light?

Use the information from the model to predict the elapse time, on earth, for any given time on the spaceship.

4. Describe the type of student assessment you will use.

Basic test.