Rubric for the simulation project – a total of 40 points

Level 1 achievements	**Score (out of 10)**
You have a simulation of your own design that runs.	5 points
Include documentation, on paper, that describes what the simulation does and how it does it. Mention specifically the principles of physics that are the basis for the simulation.	Clear and complete: 5 points Lacking in clarity, or incomplete: 3 points Lacking in clarity, and incomplete: 1 point

Level 2 achievements	**Score (out of 18)**
Originality. Is this simulation out there on the web already, or is this something we have never seen before?	Very original: 3 points Somewhat original: 2 points Not too original: 1 point
Interactivity. Does the simulation encourage and enable the user to interact with it in a productive way?	Highly interactive: 3 points Somewhat interactive: 2 points Not interactive: 1 point
Multiple representations. Include more than one way to get information across. For instance, the simulation could show the motion, have graphs, and energy bar graphs.	Three or more representations: 3 points Two representations: 2 points Only one representation: 1 point
Degree of difficulty. This achievement is based on the difficulty level of creating the simulation.	Impressive and challenging: 3 points Somewhat challenging: 2 points Relatively simple: 1 point
Programming skill. This grade is based on how you implemented the programming. Was your simulation created in the simplest, clearest way, or was it unnecessarily complicated?	Elegantly done: 3 points A little more complicated than necessary: 2 points Much more complicated than necessary: 1 point
Web accessibility. The simulation can be used via the web on a site that you control.	Active on the evening of your presentation: 3 points Active by the final exam: 1 point

Level 3 achievements	**Score (out of 12)**
Background image. If applicable, the simulation should include a background image that you have either drawn yourself, taken yourself (if it is a photo), or you have received permission from the creator/photographer to use.	Use a background image that significantly enhances the simulation: 3 points Use a background image that enhances the simulation a little: 2 points Use a background image: 1 point
Accompanying worksheet and teacher's guide. The simulation includes a printed worksheet, for use by students, and a teacher's guide, to provide direction for using your simulation to learn some physics.	Well-constructed materials: 3 points Included the materials, but they are not as clear or helpful as they could be: 2 points Included the materials, but they lack something significant: 1 point
Multiple simulations. Instead of a single simulation, create a set of at least three related simulations.	At least five related simulations: 3 points At least four related simulations: 2 points At least three related simulations: 1 point
3-D. Create a three-dimensional simulation, in which your use of the third dimension adds a lot to the simulation's effectiveness.	Use 3-D very effectively: 3 points Use 3-D somewhat effectively: 2 points Use 3-D, but not effectively: 1 point

Keep the rubric above in mind when your are designing your simulation(s). You may well decide that some of the achievements listed in the rubric are not applicable or are not worth doing. That is fine. Work on the achievements you find easiest first, and then work toward the harder ones. Don't forget to save your work early and often.

In addition to any materials that accompany your presentation, please include an assessment of your own project in which you effectively grade yourself based on the preceding rubric. We will each grade everyone else's project, too, but it will be useful to see what you think you achieved.

Project presentations are scheduled for Friday June 15th and Friday June 22nd. Each of you will have 15 minutes to show off the simulation(s) you created.