Engin 103 Spring '07 Meeting #14: Mar. 15, 2007

We did CW1.

We did CW2: Related to question 1)

The period of an ideal pendulum (mass of string is negligible, bob is not so large, no friction involved) is given by (from consideration of the gravity force on the bob)

$$T = 2\pi \sqrt{\frac{L}{g}} \qquad \text{or} \quad L = \frac{gT^2}{4\pi^2}$$

To test how ideal is our pendulum (represented by the four pairs of data we used in CW3), let do a quadratic curve-fitting by setting b=c=0 and letting the coefficient 'a' change so as to minimize the parameter 's', calculate what is the constant of gravity g from those data.

Does the model you found for your particular device apply to another device?

No, the models are device-specific; the more parameters employed the more devicespecific, since it was obtained using a specific set of data associated with a specific device. If getting a different device, new data need to be measured and the curve-fitting needs to be redone.

What is the difference between science and engineering?

Science extracts the simplicity and universality that are behind a wide range of devices or situations by ignoring many specific factors such as frictions, fluid motions, etc., i.e. using the least number of parameters as possible. Engineering includes more parameters into a model that produces excellent predictions, but the resulting model is only valid for that particular device. Both scientists and engineers use data modeling, but their approaches are different in this regard.

Related to question 2)



Project 2 is assigned (who will be your team's leader for this Project?) HW2 is assigned

Peak Performance Competition cannot be too short.

Assignments collected: CW1; CW2; HW1; Project 1 reports

Suggested items to write in the Engin 103 logbook:

 Write in your own words if the data modeling method you learned in doing project 1 could be applied to discover a new scientific law; or to make a very precise engineering prediction. Yes or no and explain why.
Write in your own words the interconnection between different issues that needed to be considered to determine why your design of a vehicle for the