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Project 1 Part I Presentations: Design for System Predictability

Project 1 leaders: please copy this page and fill in your team response below. Then save as a web page: name "p1p1.html" and upload to your *files* folder.

Team #	**Picture of system** ***If you took a picture of the system you can insert it here, otherwise leave it blank, we will take care of it.**	**a) System name** **b) What are the input X and output Y along with their units**	**c) How did you design the system so it can produce at least 10 pairs of distinctive values for X and Y** **d) How did you reduce to a minimum any uncertainty in the system so to increase system's predictability**	**e) What models may work for this system using the Spreadsheet?** **f) Which model you think will best describe the system, why?**
1		A) Ramp & Marble system B) Input X = height of ramp Output Y = distance traveled.	c) we set up different heights on the ramp which would effect the output y in terms of distance, by doing this we came up with 10 different values. d) N/A	e) scatter plot f) scatter plot because it displayed the data in a particular way that's easy to understand.
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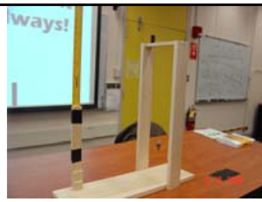
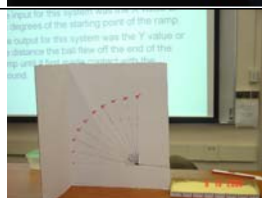
3		Ball Ramp 1-10 inches for X and Y is between 2-1/4 inches and 12-1/2 inches from the edge of the ramp	c) We designed the system to use a ramp that would launch the ball. Based on different heights the velocity of the ball will change d) we used toothpicks to reduce the human aspect	e)The quadratic model f) The Quadratic model will work best because it is a parabola

4		a) Pendulum b) The input values are from 35 cm to 50 cm. the output values will be gained by seeing where the weight of the pendulum reaches as it approaches the original drop height.	c) The system has a large height of one meter. d) We increased the weight on the pendulum to increase the systems accuracy.	e) The linear or quadratic model would work when using this system. f) I think the linear model will best describe the system, since each difference between x and y is the same.
5		**a.) Hockey ramp** **b.) Input: Starting Ramp Angle (degrees) Output: Distance (inches)**	c.) The starting ramp uses a square to measure the angle, and the track is measured in inches. d.) We used an enclosed tube as to reduce air friction, a straight track, and we also use a card at the starting ramp so human interaction is at a minimum	e.) The linear model may work best using the spreadsheet. f.) The linear model will describe the system best, as variables in this system are reduced to a minimum, since the ball is in an enclosed environment
6		**a) Ball Ramp Design** **b) The input is X in degrees and the output Y is the distance the ball travels.**	c) We chose 10 different X values ranging from 0-90 degrees and the Y values are based on these X values. d) Uncertainty was reduced by having a gate that held the ball before release.	e) We believe the cubic model will work for this spreadsheet.
7		b) Input (x) = Height of Ramp Output (y) = Distance of Car Both measured in centimeters	c) In order to have varying X values, we changed the height of the ramp 10 times in order to get 10 different distances that the car travels d) We are using a long box of sand in order to prevent the car from rolling any further	e) A quadratic model might be the best because they can sufficiently describe projectile motions. f)
8		a) Pulley b) Inputs: 100g, 150g, 200g, 250g, 300g, 350g, 400g, 450g, 500g, and 550g weights Outputs: 20g, 50g, 80g, 120g, 140g, 180g, 210g, 250g, 280g, and 320g.	c) We designed our system with a spring scale and with weights in increments of 50g. d) We have a spring scale that provides correct measurements	e) A linear model may work for this system. f) A linear model will best describe this system because the weights and the force needed to lift them is directly correlated.

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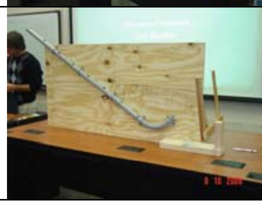
10		Ball Ramp Input X : height of hole (inches) Output Y : goal distance (inches)	-We created ten holes in our ramp -To reduce uncertainty we created a ‘gate’ to hold the ball until we wanted to release it, and we also attached our ramp securely to a sturdy wood setup	-It seems like the linear or quadratic models may work for this system -The linear model will probably work best because there are no big spikes in data

According to Project 1 specifications (e-syllabus) the grading criteria are as follow:

Items	Points for both Part I and Part II
Project completed and presented	70
Project performance (perform tasks specified)	50
Good design	30
Project presentation and webpage	50

Project 1 -part I/ Teams	1	2	3	4	5	6	7	8	10
Project completed (35)									
Design for predictability (15)									
Performance& readiness (25)									
Presentation and web page (25)									
Total part I (100)									

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LOGBOOK: example of a logbook page **-Use a quadrille notebook; number all pages; date all entries** **-Write your notes for all activities, thoughts, problems and solutions, and learning conclusions related to Engin 103. You should write down progress, outcomes, and conclusions on projects and teamwork; conclusions from class work (including LabVIEW) and homework.** **-In addition you should answer in the logbook all questions listed in these notes in blue, as shown below:** **17) Sketch the system built by your team, describe the input and output variables on the sketch. What units will you measure these variables, and with what instruments.** **18) Explain with a sketch the different design elements your team used to increase predictability. Explain what mathematical model will be the best to describe the system using the X and Y variables mentioned in the previous question.** back