Engin 103	Topics:
October 13, 2011	Project 1 -Part II Presentations
	Logbook questions
back to e-syllabus	

Project 1 Part II Presentations: Data Modeling and System Predictability Testing

Excerpt from Project 1 specifications (see link in e-syllabus): "In the second day, you will show the class the predictability of your system. The predictability will be checked as follows: you will be required to show a sufficient (at least 10) number of data (X,Y)'s you measured using your system, and the best model or equation Y'=f(X) you found with Excel in relating these data. Next you will be required to use this model to make a prediction Y' for some new value X, given by the audience, with your model. Next you will run your system for that input X, obtaining the actual output Y. Your system will be considered predictable if Y' and Y differ by less than 10%."

Project 1 leaders: please copy this document and fill in your team response below. Then save as a web page: name "p1p2.html" and upload to your *files* folder.

	📂 🖬 ຊ	88	🕰 🖑 🛍		<u>n</u> - 🎸	9 - (*	- 🧕]Σ.		1009 🥼 🥼	6 🔹 🕜	= Arial		- 10) - B	3 <u>7 U</u>	E 🔳 🗄
5	1 1 2								_								
h	12 🔁																
	G31		fx														
	Α	В	С	D	E	F		G	Н		J	K	L	M	N	0	P
Ē	Tomas Mat	erdey	P1	Team #	Date												
		у	Guesses	Y'=dX ³ +a		s						P1					
					(Y'-Y)^2	paramet											
3	2	0.97	0.77649	0.56602		0.6013		25.00									
	3.2	1.17	-2.70932				Ê	20.00									
5	3.6	1.39	3.118638		0.403386		Pendulum lengths (m)	20.00					•	×			
;	4.1	1.64	-0.02999				£										ŀ
7	4.5	5.00		3.917506			E,	15.00				•				 Data 	· -
}	4.7 5.2	5.12 5.58		4.423531			E	10.00								Mod	el -
) 0	5.2	5.50		5.809198	0.054531 0.218263		-	10.00							Ľ		-
1	5.0	8.71			0.210203		Ę	5.00									
2	6.2	9.30			0.079269		Pel										-
_	6.35	10.00			0.207205			0.00	-		• •			T			
3					2.649373				0	2	4	6	8	10	12		
_		9 9 1		11.54001													
4	6.9	9.91 13.98			0.857479												
4 5	6.9 7.3	13.98		13.05192	0.857479						P	eriods (s)					
4 5 6	6.9			13.05192 14.798							Pe	eriods (s)					
4 5 6 7	6.9 7.3 7.75	13.98 15.00		13.05192 14.798 16.17907	0.040802						Pe	eriods (s)					
4 5 6 7 8 9	6.9 7.3 7.75 8.1 8.8	13.98 15.00 14.72 19.60		13.05192 14.798 16.17907 18.96852 20.55971	0.040802 2.119332 0.401296 0.31327												
4 5 7 8 9 0	6.9 7.3 7.75 8.1 8.8	13.98 15.00 14.72	ested	13.05192 14.798 16.17907 18.96852 20.55971 20.95539	0.040802 2.119332 0.401296 0.31327 0.182957	y'	val	ue cal	culated	d using l		eriods (s) odel for y	our sy	/stem			
4 5 7 8 9 0	6.9 7.3 7.75 8.1 8.8 X valu 9.6	13.98 15.00 14.72 19.60 Ie requ 22.30		13.05192 14.798 16.17907 18.96852 20.55971	0.040802 2.119332 0.401296 0.31327 0.182957	y'			culated	d using l			/our sy	/stem			
4 5 6 7 8 9 0 1	6.9 7.3 7.75 8.1 8.8 X valu 9.6	13.98 15.00 14.72 19.60		13.05192 14.798 16.17907 18.96852 20.55971 20.95539	0.040802 2.119332 0.401296 0.31327 0.182957 0.029255	y'		ue cal 0.24%	culated	d using l			/our sy	/stem			
4 5 6 7 8 9 0 1 2	6.9 7.3 7.75 8.1 8.8 X valu 9.6	13.98 15.00 14.72 19.60 Ie requ 22.30		13.05192 14.798 16.17907 18.96852 20.55971 20.95539 22.13447	0.040802 2.119332 0.401296 0.31327 0.182957 0.029255	y '			culated	d using l			our sy	/stem			
3 4 5 6 7 8 9 9 0 1 1 2 3 4	6.9 7.3 7.75 8.1 8.8 X valu 9.6	13.98 15.00 14.72 19.60 Ie requ 22.30		13.05192 14.798 16.17907 18.96852 20.55971 20.95539 22.13447	0.040802 2.119332 0.401296 0.31327 0.182957 0.029255	Y'			culated	d using l			our sy	/stem			
4 5 6 7 8 9 0 1 2 3	6.9 7.3 7.75 8.1 8.8 X valu 9.6 6.5	13.98 15.00 14.72 19.60 1e requ 22.30 10.053		13.05192 14.798 16.17907 18.96852 20.55971 20.95539 22.13447	0.040802 2.119332 0.401296 0.31327 0.182957 0.029205		-	0.24%			pest mo		/our sy	/stem			

Section 1 (9:30 AM)

Team #	Snapshot of Spreadsheet showing best mathematical model for your system	 a) Your best model" A=; B=; C=; D= b) What are the requested X= and predicted output Y'= along with their units 	 c) List the three values obtained Y1=; Y2=; Y3=; d) List their average Yav e) Y'-Yav /Yav *100= % 	 f) Explain your thoughts on what design elements most influenced the predictability obtained g) Explain what can be done to further improve its predictability
<u><u>1</u> section 1</u>				
<u>2</u> section 1				
<u>3</u> section 1		a)	b)	c)
<u>4</u> section 1			a)	b)
<u>5</u> section 1				
<u>6</u> section 1				
<u>7</u> section 1		a)	b)	
8 section 1				
<u>9</u> section 1				
<u>10</u> section 1				

	Snapshot of Spread showing best mathe nodel for your syste	matical	Your best mo A=; B=; C=; D What are the requested X= predicted out along with the units	= and out Y'=	j) k) I)	List the three values obtained Y ₁ =; Y ₂ =; Y ₃ =; List their average Y _{av} Y'-Y _{av} /Y _{av} *100= %	m) n)	Explain your thoughts on what design elements most influenced the predictability obtained Explain what can be done to further improve its predictability
section 2								
2 section 2								
3 section 2								
4 section 2								
5 section 2		i.)						
6 section 2								
7 section 2								
8 section 2								
9 section 2								
10 section 2								
Report for	team #							
Submitted			Or Ye	n time		Late		
1	Uploaded electronic copy					No		
Project 1 web page Team participation table				es		No		
				es		No		
Report sub	mitted (80)	Progress Report: p1pr.html (5)						
	Ļ	p1p1.html (5)						
	F	p1p2.html (5)						
		Introduction (10)						

	Design/Building (25)		
	Analysis: Spreadsheets		
	(20)		
	Conclusions (10)		
Good writing practices	Grammar and		
(20)	presentation (5)		
	Logical arguments and		
	structures (5)		
	Accurate,		
	completeness; non-		
	plagiarism (10)		
Deduction			
Project report total (100))		
Project presentation tota	ıl (200)	Performance and Design (180):	
		Web pages Parts I and II (20):	
Project 1 total (300)			

Section 1

Project 1 -part I P&D/ Teams	1	2	3	4	5	6	7	8	9	10
D. 1. (1/25)										
Project completed (35)										
Design for predictability (15)										
Performance& readiness (25)										
Presentation (15)										
Total part I P&D (90)										

Project 1 -part II P&D/ Teams	1	2	3	4	5	6	7	8	9	10
Percentage error										
Project completed (35)										
Spreadsheet and data modeling (15)										
System predictability (25)										
Presentation (15)										
Total part II P&D (90)										

Section 1

Project 1 -part II P&D/	1	2	3	4	5	6	7	8	9	10
Teams										
			Flexigl							
			ass Catap				Ball	Trebuchet	The	
	Hoist	Free Fall	ult	Marble Ramp	Fulcrum	Free Fall	Ramp	Swing	Ogre	
Percentage error	0.52%	1.05%	2.53%	5.63%	6.40%	6.92%	6.71%	12.34%	1.98%	
Project completed (35)	35	35	35	35	35	35	35	35	35	
Spreadsheet and data modeling (15)	15	20	15	15	15	15	15	15	15	
System predictability (25)	25	25	23	20	19	19	19	19	24	
Presentation (15)	15	15	14	14	15	14	15	14	14	
Total part II P&D (90)	90	95	87	84	84	83	84	83	88	0

Project 1 -part II P&D/	1	2	3	4	5	6	7	8	9	10
Teams										
	Catapult	The Ramp	Water Bottle Pulley	The Trap	Car Launche r	Maarble Ramp	Ball Ramp	Catapult	Bow & Arrow	Mousetr ap Car
Percentage error	1.48%	2.95%	5.88%	22.00%	0.32%	8.25%	2.64%	10.06%	4%	7.82%
Project completed (35)	35	35	35	35	35	35	35	35	35	35
Spreadsheet and data modeling (15)	15	20	15	20	15	20	20	15	15	15
System predictability (25)	25	22	20	20	25	19	23	19	20	19
Presentation (15)	15	15	15	15	14	15	14	14	14	14
Total part II P&D (90)	90	92	85	90	89	89	92	83	84	83

back

back

<u>back</u> back

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:

27) Insert the spreadsheet made by your team for the system presented. Make a table of the coefficients and parameter s for the different models considered by the team, similar to that submitted in CW4. Explain which model was chosen to be the best

and why.

28) For each of the other teams, list their predictability results (in percentage error between prediction and average measurement done in class) and try to critically relate these results with their system designs, based on your own points of view. back