Engin 103 February 17, 2009 back to e-syllabus	Topics: CW1 Project 1 Logbook questions

Engineering 103 -UMass Boston

CW 1

(Class Work #1)

Use the clicker provided to answer the following questions regarding the engineering fields introduced in Project 0

		Question
	1	What is most true about Aerospace and Aeronautical (AA) Engineering?
A		AA engineers hold 1.5% of all engineering jobs and 3M company is a potential employer
B		AA engineers hold 6% of all engineering jobs and Advanced Magnetics is a potential employer
C		General Motors is a potential employer
D		AA engineers hold 6% of all engineering jobs and 3M company is a potential employer
E		AA engineers constitute 20% of the American Ceramic Society
	2	Students in what engineering field are most likely required to take this combination of courses microbiology, hydrology, and engineering geology
A		Chemical Engineering
B		Mechanical Engineering
C		Materials Science Engineering
D		Industrial Engineering
E		Civil Engineering
	3	What is most true about Biomedical (BM) Engineering?
A		BM engineers hold 2% of all engineering jobs and can be found working in the Environmental Safety and Health industry
B		BM engineers hold 2% of all engineering jobs and can be found working in the Foods and Beverages industry
C		BM engineers hold 0.9% of all engineering jobs, and Genzyme Corp. is a potential employer
D		One common technology used by BME is a Process Monitoring software
E		Need to take Process and Plant Design in their senior year in college
	4	Engineers in which field will most likely lead the design of a heating and ventilation system?
A		Civil Engineering
B		Electrical Engineering
C		Mechanical Engineering
D		Materials Science Engineering
E		Industrial Engineering
	5	What is most true about Computer Engineering (CE)?
A		CE engineers hold about 20% of all engineering jobs and may find jobs in the semiconductor industry

B		CE engineers hold about 5.3% of all engineering jobs and may find jobs in the semiconductor industry
C		CE engineers hold about 20% of all engineering jobs and Google is a potential employer
D		CE engineers hold about 5.3% of all engineering jobs and Cisco Systems is a potential employer
E		CE engineers are required to take Electromagnetic Theory for their degree
	6	Engineers in which field is more concerned about increasing productivity by managing people, methods, and technology?
A		Electrical Engineering
B		Manufacturing Engineering
C		Mechanical Engineering
D		Industrial Engineering
E		Civil Engineering
	7	Engineers in which of the following fields are most likely to use seismic tomography and imaging software?
A		Biomedical Engineering
B		Geophysical Engineering
C		Civil Engineering
D		Computer Engineering
E		Electrical Engineering

back

Introduction to Project 1

Design and build a simple system, a system produces a measurable output Y for each measurable input X. Model the system by relating a sufficient number of (X,Y) pairs using Excel to obtain the best fit. Test system predictability by comparing actual output for a new input with the model prediction. Read complete project specifications in the course e-syllabus.

FAQ:

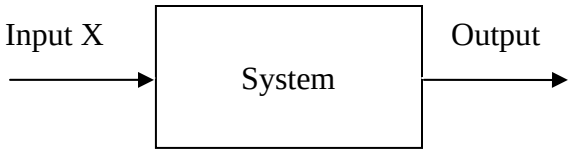
1) Should we bring the system into class or do we need to make a video?
   The system needs to be brought in for the presentations
2) Can the money limit exceed twenty dollars a little?
   No
3) What kind of design we are supposed to look at? Anything specific?
   -This is the main difference between a project and a homework, there is not a unique answer to a project. However the project specifies certain things that need to be satisfied.
   Are there any previous models from the previous class that we can take a look at?
   - A "rollercoaster track" was shown in class
4) What are we going to be measuring?
   -This is a good question, you will be doing two types of measurements in this project: a) Raw measurements of the inputs X's and outputs Y's for the system you built. (These raw measurements will be used to obtain a model or equation describing the system, you will create an Excel spreadsheet to do this); b) Once you have the equation/model in hand, you will use it to measure the predictability of your system by comparing a new measurement (done during the second day of presentation) with the prediction from your equation.
5) What type of materials are we limited to?
   -No, just the $20 limit
6) What kind of systems could we build?
   -See answer to 3)
7) Is there any size constraint to the system?
   -No, but it should not cause any damage to the lab, or pose a danger to the

class

8) Can we use items we obtain for free or already own?
   -Yes
9) How do we get a model/equation for our system?
   -Work through CW3-5
10) Where can we find a device capable of measuring the frequency
   -Measure lengths, weights, times, not frequency
11) How to build a pendulum? Should the ball be metal or plastic
   -See answer to 3)
12) Do we need a PowerPoint presentation?
   -No, but if one is made, it can be uploaded as the team web page for Project 1

Systems

A system is a physical object that produces a measurable output (Y) for every measurable input (X).



Y'= f(X)

Examples of a system could be a catapult (X=initial height of a weight; Y=range for a clay ball), a pendulum (X=period; Y=length needed to produce that period), or a car on an inclined ramp (X=ramp angle; Y=distance traveled in 2s). When random factors affecting the system are controlled (task of the engineering design team), it can be described with an equation or model, that is, using this model it is possible to predict the output given an input.

back

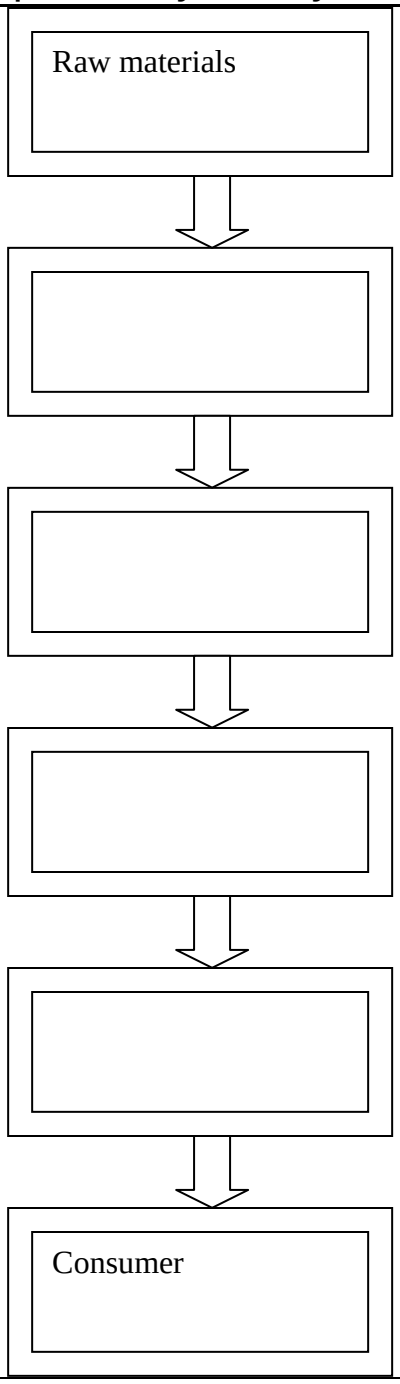
LOGBOOK: example of a logbook page

-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:

11) Make a summary of what you have learned from CW1 (see above)

12) Create a flow chart to show the supply chain of an automobile from the raw materials to the end consumer. The

2)_____ 3)_____ 4)_____ 5)_____ 6) Consumer. In each step, indicate what type of engineers from the table below would be involved. In a few words explain what they do specifically. Can you include all ten fields in the supply chain?



Engineering fields	Abbreviations
Aeronautical and Aerospace Engineering	AAE
Biomedical Engineering	BME
Chemical Engineering	ChE
Civil Engineering	CiE
Computer Engineering	CE
Electrical Engineering	EE
Geological/Geophysical Engineering	GGP
Industrial and Manufacturing Engineering	IME
Material Science Engineering	MSE
Mechanical Engineering	ME