Engin 103 Spring '07 Meeting #8: Feb. 22, 2007

We introduced Project 1 on Data Modeling as applied to data smoothening. We started to learn how to do data modeling using polynomials.

Project 1 requires the use of data modeling with Excel (\bigcirc Microsoft), this is learned by doing CW3, a quadratic curve-fitting or data modeling. What is data modeling? When certain input data X is applied to a system, certain output data Y is produced by that system. A mathematical model of the system can be obtained by relating Y to X: e.g. Y'=f(X). We have used a Y' to indicate that it may not be possible to obtain an equation that relates Y to X for every pair of data, but just a best model.



Examples of the 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). To simplify the introduction, we discuss just simple polynomial models, e.g.

 $Y'=aX^{2}+bX+c$ Y'=bX+c $Y'=dX^{3}+aX^{2}+bX+c$

How to obtain a model? CW3 can be done by following these 7 steps. The process consists of using Solver (get it through Tools/Add-ins if needed) to minimize a "standard deviation" parameter s by allowing the polynomial coefficient to vary. After using Solver, the final values for a, b, c determines our quadratic model that represents our pendulum.





The teams are assigned user names and passwords to access the University servers for uploading team web pages. Instructions for creating, uploading, and maintaining the team web pages can be found at

http://www.faculty.umb.edu/tomas_materdey/103s07/files/webinstruct.html

Every student should send the instructor a message containing the paragraph as shown in section 1 of these instructions, with the subject "requesting password". If you haven't done so, please do it ASAP.

Section 2 is on creating the index.html file and section 3 is on creating the projectY.html file and linking it from the index.html file. The instructions also explain how to upload these files onto the server. If you have pictures, then section 4 contains instructions about the additional folder you need to upload. Team WebPages can be seen at http://www.faculty.umb.edu/tomas_materdey/103s07/files/teams.html

Every student should learn how to create and upload a webpage. A web page for project 0 is required and due next class, team leaders are encouraged to upload their PowerPoint presentations saved in html format as the project0.html file. WebPages are also required for projects 1, 2, 3 are required. The leaders are the webmasters.

Suggested items to write in the Engin 103 logbook:

- 1) Write in your own words what is a process of data modeling from start to finish, as done using Excel
- 2) Abbreviate the instructions for the Webmaster in 8 entries (using one line per entry)