Math 319 Homework M1

1. Please summarize for me:

 - your name

 - your nickname, if you go by one, or how to pronounce your name if you think I might not know. And/or pronouns, if you wish.

 - your major and minor/2nd major

 - have you had statistics or probability? If so, which class/how long ago?

 Did you like it, or do you want to avoid it in future projects?

 - have you had a computer programming class? If so, which language/how long ago?

 Did you like it, or do you want to avoid it in future projects?

 - your past, current, or future jobs

 - other hobbies/interests possibly related to math modeling

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2. Read the problem descriptions from the old Math Contest in Modeling

(MCM) problems, at <http://emunix.emich.edu/~aross15/math319/mcm-1985-to-2008.pdf>

up to 2008, and then <https://www.contest.comap.com/undergraduate/contests/mcm/previous-contests.php> for 2009 and later.

\* Tell me which 3 are your favorites (which you'd like to have worked on the most), and why.

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3. Read the list of standard projects at

<http://emunix.emich.edu/~aross15/project-guides/standard-projects-319.txt>

and the project overview at

<http://emunix.emich.edu/~aross15/project-guides/ross-project-overview-guide.htm>

\* Write down in your homework which project ideas are your favorite so far, and why.

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4. Here is a list of good reasons to make models:

Predict

Explain (very distinct from predict)

Guide data collection

Illuminate core dynamics

Suggest dynamical analogies

Discover new questions

Promote a scientific habit of mind

Bound (bracket) outcomes to plausible ranges

Illuminate core uncertainties.

Offer crisis options in near-real time

Demonstrate tradeoffs / suggest efficiencies

Challenge the robustness of prevailing theory through perturbations

Expose prevailing wisdom as incompatible with available data

Train practitioners

Discipline the policy dialogue

Educate the general public

Reveal the apparently simple (complex) to be complex (simple)

from "Why Model", Joshua M. Epstein (2008)

Journal of Artificial Societies and Social Simulation vol. 11, no. 4 12

http://jasss.soc.surrey.ac.uk/11/4/12.html

Which of these reasons is the most surprising to you? Explain why.

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5. Tell me which of these professional societies (or any others that suit your interests) you are interested in joining as a student member, and let me know how I can help verify your student status:

\* MAA - Math for 4-year colleges, mostly focused on teaching

\* AMATYC - Math for 2-year colleges, mostly on teaching

\* NCTM - Math for K-12 teaching

\* AMS - pure math, ams.org

\* SIAM - applied math

\* INFORMS - Operations Research math

\* ASA - statistics

\* AEA - economics

\* ACS - chemistry

\* AAPT - physics teachers

\* APS - physics research

\* IEEE - electrical engineering/computer science

\* AMS - meteorological, ametsoc.org

\* AGU - geophysical

\* GSA - geological, geosociety.org

\* ACM - computer science

\* IIE - industrial engineering

Student memberships typically cost $30-$50 per year. If you truly cannot afford this investment in your future right now, ask your society if they have a sliding-scale membership fee.