MATH 442: Mathematical Modeling

Fall 2015

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Office hours:	Thursdays, 2:00–4:00pm or by appointment
Lecture:	Tuesdays + Thursdays, 8:00–9:15am
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Writing assignment 1

Assignment

Write a dialog in which one person explains to another what mathematical modeling is. Assume that the person explained to has some kind of college degree, but not necessarily in mathematics.

Your dialog should fill about 2–3 pages, but how much you write exactly should depend on how much or how little you think is worth saying. Do not exceed 4 pages at the maximum.

Key points to make

The assignment is purposefully vague. Be creative.

If you have trouble thinking of ways to address the assignment, think of these questions:

- Why do we create mathematical models?

- How do we create mathematical models?

- How do assumptions enter mathematical models? Do you know whether a model is correct or appropriate for a given situation?

Explaining abstract concepts to others often works best through examples, ideally from their own realm of experience. Use one or more examples of mathematical models to illustrate the explanations in your dialog. Dialogs often contain a short preamble that state who is present and who these people are (think of how a theater plays looks in a book). Feel free to use a preamble to introduce your characters.

Specifics

- Write your dialog with the http://www.overleaf.com service. To this end, create an account there, create a new document, and create a new document from the available templates. Choose a template that is suitable for a dialog. Since dialogs typically have short pieces of text and few long formulas, a two-column template would be a good idea. There are some among the "Project/Lab report" and "Academic Journal" templates, for example.

  Alternatively, if you really want, you can also write your dialog in straight LaTeX on your own computer.

- Bring a draft to class Thursday 9/10/2015 where you will engage in a peer review process.

- The final version of your assignment is due Monday 9/14/2015 8p.m. Upload it to the eCampus section for MATH 442.

Grading: 20% for structure and organization; 60% for clarity of explanation of what mathematical modeling is; 20% for using examples of mathematical models well to illustrate specific points one of your characters is making in the dialog.

Why I'm assigning this project

In professional life, you will have to write – lots and often. You have already done this in high school and in college, but there is a significant difference: Before, you have mostly written essays for your teacher or professor, i.e., to someone who generally already knew the answer to the questions you are answering and with whom you can skip steps and assume that you don't need to explain everything. In professional life, this is generally not true: you will be assigned to research a subject, to summarize previous work, or to write up the consensus of your group. Most of the time you will be documenting something for your co-workers but even if you write for your boss, she will not know the answer (or you wouldn't have been tasked with finding it). In other words, you will write for people who know as much as you did *at the beginning* of your project, and this is the level of explanation you should aim for.

Writing at this level will be your assignment for everything you write this semester. However, judging from my experience in previous assignments (and with my grad students), just stating it like this does not usually work. It seems difficult to make the switch from writing for your professor to writing for your peers.

Consequently, I'm giving you this assignment in which I'm not just asking you to write at this level, but in which the whole structure – a dialog – will permanently remind you who you are talking to. Use this format to question yourself about how someone at your level of experience would read what you write. Would they understand what your are trying to explain? Would they think that you skip key steps? You can even make this part of your dialog, if you want (e.g., by letting one character ask the other to go back and explain a key step the latter had omitted).