Math 420 Project Draft Proposal

Due: Monday, 13 November, 2017

Background

Project Goals: The purpose of the project is to give you an opportunity to apply your mathematical and computational skills to address a scientific question based on the analysis of a mathematical model. It will be graded on the quality of your analysis, your ability to think critically about your work and the work of others (e.g., the work of others you may be extending), and how well you communicate your findings.

Project Report: The final product will be a typed report that introduces the questions(s) and real-world system(s) that are the focus of your project, the model(s) and/or methods, the related analyses that constitute your main results, and a separate Discussion section that discusses your results in the context of your question(s).

Project Presentation: In addition to your report, each student will briefly present their project results at the end of the semester during the final exam time (see syllabus). This will be in the form of a brief (2-3 minutes!) slide presentation.

Typical projects: These are usually either a modeling project that fits into an ongoing research program (e.g. if you're currently conducting undergraduate research) or is an extension of work in a peer-reviewed research publication. Mathematical models (dynamic models like ODEs, PDEs, maps, etc.; stochastic models like Markov Chains; Optimization models; etc.) are preferred over statistical models, unless the project is a novel data analysis related to your other research activities. Finally, some students will do a methods comparison, however these typically fit into the above categories and/or involve a bit more work than your typical project. **I recommend you find an interesting modelling paper and talk with me ASAP about using it as a basis for your project.**

Draft Proposal

The draft proposal due Monday the 13th should include the following:

1. Any references you will be basing your project on (citations are fine, print copies are welcomed), and a brief overview (typically no more than 1-2 paragraphs) of the work that forms the basis of your project.
2. Your plans to build upon that work for your project. For example, how you will be modifying an existing model, building your own model, and/or what methods of analysis you plan to conduct.
3. Any additional information you would like to share, and/or questions you might have for me. For example, if you are uncertain of how to extend the model or what analyses would be most appropriate, spell this out and request we meet to discuss some reasonable options.

Again**, you are strongly encouraged to meet with me in person to discuss your projects**! Students often struggle to identify a project topic and in many cases the process of finding a suitable project can take longer than the actual work that goes into the final report. The sooner we can identify exactly what your project will entail, the better!