

## Math 420/620 Project Proposal

Due: Monday, 23 April, 2018

The purpose of the project is to apply your mathematical skills to address a scientific question based through 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.**

**INSTRUCTIONS:** Please submit the following, as well as any additional material (e.g. the PDF of a paper you are basing your project on) via email with the subject "MATH 420/620 Project" and include these documents in a single zip file named "LASTNAME-FIRSTNAME.zip" (this greatly speeds up my workflow, and minimizes the chances of your email getting overlooked!

### Please BRIEFLY describe the following

- 1. Project Goal:** What question are you trying to answer? Please cite the main reference(s).
- 2. Model(s) and Methods:** How do you propose to meet that goal using a mathematical model? For example, how will you modify an existing model and/or what methods will you use?
- 3. Any project-specific questions or concerns you have about moving the project forward.**

**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 strongly preferred over statistical models unless the project is a novel data analysis related to your own research activities. Another option that has worked for past students is 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.**

Again, **you are strongly encouraged to meet with me during office hours to discuss your projects** if you haven't already! 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.**

**Project Presentation Reminder:** 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