

## FINAL PROJECT

Instead of a final exam, you will have a final project. The final project entails selecting and presenting a journal article. I also expect a written summary of your talk. In the presentation, mathematical modelling will be emphasized.

### **Presentation**

The presentations will be held on Saturday, June 12th in MS 6943 from 8am until 6pm. Give a 13-minute presentation and be prepared for a two-minute question/answer session. You are expected to show up as an audience on the talks within your group. For example, if you're speaking at 8:15am, you're probably in group 1 with other speakers scheduled to talk at 8:00am, 8:30am, and 8:45am. Of course, you are welcome to stay and listen to some of your classmates outside your group.

I will have a sign-up sheet outside my door by Wednesday, May 19th. Please put your name next to a time slot. Prepare your talk in transparencies; the projector will be available during your talk.

### **Finding a journal article**

I have reserved two copies of the book at the Science and Engineering Library called *Mathematical Modelling: Classroom Notes in Applied Mathematics* by Murry S. Klamkin. This book is a collection of articles from several journals and science magazines. Select an article from this book by May 26th. There are enough articles in this book so that each student in the class work solely on a particular paper. If there are several students interested in an article, it will be handled as *first come first serve basis*. So it's imperative that you pick an article as soon as possible.

Here are some things to consider while searching for an article:

- What is the problem? What is the motivation for studying/solving this problem?
- What is being modelled? E.g., population of sharks, spring-mass system, etc... How is the model constructed? What is the simplest version of this model? What are the factors added that were initially neglected to make a more realistic model? What are the assumptions?
- How did the authors analyze the solution to the modelling equations? Can the equations be solved explicitly? Or were they solved numerically. Did the author determine the qualitative behavior of the solution? If so, how? What are the mathematical techniques

used by the authors? Are there graphs? What do they represent? What are the results? Do the results *make sense*? Does the mathematical analysis match the physical problem?

- Critize the paper. Was the model too simple or unrealistic? Is the paper mathematically rigorous? If the solutions to the modelling equations were found numerically, was this approach the best method? Could the authors have tried different methods?

### **How am I being graded?**

See presentation evaluation form on the final project homepage.

### **Things to keep in perspective**

You will probably not have complete understanding of the entire journal article. This is okay because your goal is not to have full understanding of the article but rather to extract information that you need to learn the mathematical modelling aspect of the paper. Think about how we analyzed the spring-mass system, the population of one-species, etc...

### **Dates to remember**

- by May 26th turn in title and author(s) of selected article and schedule your talk
- by June 2nd submit a tentative outline of your presentation
- around June 9th prepare and practice talk
- on June 12 show up for presentation with written summary (2 – 3pages)