Math 345 project guide
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The purpose of the study-research project in Math 345 is to apply knowledge learned from the course to a real world biological modeling problem, or to investigate a mathematical problem arising from some course material. Topics of the project can be applications of diiferential/difference equations in biology, or a topic in mathematical biology which is not fully exploited in the class.

Project is to be done individually or by a group of two students (for two projects). Students can select a topic from the list provided by the instructor, or choose a topic by him(her)self. (In the latter case, the topic must be approved by the instructor.)

The project paper is due December 10th, Monday (5pm); and the presentation will take place in the last two week of class (November 29, December 4 and 6). The basic time table is: in last September and early October, choose the topic, form teams, and collect information from library and internet. **You should submit a title and a 200-word abstract by email to me by October 8th**. In the second half of October and first half of November, solve the problems, write computer programs to conduct computation, and write the paper; In the second half of November, refine the paper, give the presentation, and submit the paper by December 10. **If you are taking Math 300, then your preliminary paper must be submitted by November 26 by email.**

The project is to write a paper about 5-10 pages long (not including detail computation sheet, computer programs, and computer generated graphics), and to do a 10 minute (8 minutes plus 2 minutes Questions/Answers) presentation about your research in class at the end of the semester. If necessary, your paper can be longer than 10 pages. You need to type the main body of the paper using Microsoft Word or LaTeX, and the details of computation can be included in the paper as appendices. You do not need type computation, but they must be clearly written and readable.

If your project is about a application problem, you should introduce the background, history, assumptions, physical/biological laws of the mathematical model; give appropriate dimension analysis to all parameters and variables, and introduce dimensionless variables to simplify the equations.

For mathematical part, you need to state clearly which methods you are using, list the major steps of computation in the main body of the paper. When reference books usually give the solutions of problems which you study, you should provide more details, explain all formula you use. Use your own computer programs and graphing tools to produce the symbolic and numerical calculation results and graphs. When using other people's work, you must quote the original paper with title, names of all authors, name, volume number and issue number of journal, date of publication. If quoted work is on a webpage, you must provide the full name of the link to the referred webpage. You should list and index your references at the end of the paper, and quote them in a name like [1], [2], or [S], [K].

The grading criteria will be almost completely subjective since the projects are open-ended. The grades that I assign on the project will be based on the depth, clarity and precision of (mathematical) thought, correctness of mathematical calculation involved, writing style, and organization of the paper.