

Project Structure, Deadlines and Grades

The project will replace the final exam for the final course grade. You can do both and the best grade of that of the project and final exam will be used to determine your course grade. If you are taking this as a qualifying course and attempt to pass the qualifying exam for this course this semester, then you must take the final.

Deadlines and Grades

Tuesday, October 24. Project proposal (3-5 pages, including one page on the statement of the problem, an initial model, parameter estimation plan and some simulation figures) due.

Tuesday, December 5. Project presentation (10-25 minutes, 40% of the grade)

Tuesday, December 12. Project is due by noon in my office (PSA 429) (12-18 single space pages with font size 12, 60% of the grade).

Structure

The following suggestions are simply guidelines.

Statement of the problem. I would like to see a clear and well stated problem or a group of problems. To this end, I will appreciate your effort in describing the biological background and your comment as why the problem is interesting and timely. I think 2-3 pages will be needed to make a convincing pitch of the problem.

Model formulation and justification. Be very careful and accurate in stating your biological and mathematical assumptions and present your justifications. I will also appreciate your comments on alternative ways to model the same problem. This shall also take 2-3 pages.

Parameter estimation and simulation. I will appreciate your best effort in estimating the ranges of your parameters through your experiment data (when available), or from literature. Please document such estimations in details. I will encourage you to perform a systematic and well planned simulation and present your computational findings. Some bifurcation diagrams can be very useful. This will need 3-4 pages.

Mathematical analysis. You shall attempt to perform some standard preliminary mathematical analysis on your model. This may include positivity and boundedness of solutions, existence and local stability of nonnegative steady states. I think you will need 3-4 pages on this.

Implications, limitations and future directions. Use your imagination and even speculation. I enjoy reading those. I will also value (highly) your critical comments of your own work. This self-critics shall enable you to present a good set of directions for future work.