

Project Expectations

Group proposal. (Already done)

Group presentation. This will be given in class in the last 3 weeks of the semester. Its not necessary for everyone in the group to stand up and talk during your presentation, but I would expect that you will arrange some kind of fair division of labour within your group - e.g. if you dont like public speaking, you can do an extra share of the work preparing the presentation (probably Powerpoint or LaTeX/Beamer).

Group write-up. Im looking for something on the order of 5-15 pages long, including equations, figures, and references, but not counting code. Short bits of code are OK; if you have lots of code, please put it in a separate module and attach it at the end. This write up cannot be done by hand and MUST be typed up.

Expectations

The project has four basic components: interpretation, analysis, computation, and parameterization. The balance among these components (relative amount/depth of each) in your project will depend on the interests and skills of the people in your group and the project you have chosen.

Interpretation

Interpretation means the translation from the real world to mathematics/code and back again; this will show up in your introduction and discussion. What is the system? Why is it interesting or important? What assumptions do you choose for translating the world into a set of equations or computer code? What are the real-world meanings of your mathematical and computational findings?

Analysis

This is formal mathematical analysis, e.g. showing that the system is bounded; finding equilibria; assessing stability of equilibria; finding general conditions on parameters that lead to different outcomes (combinations of stable/unstable equilibria, etc.); in some cases, finding time-dependent solutions. If your chosen model is complex (some combination of many state variables, nonlinearity, stochasticity, etc.), you

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may have to construct a simplified version in order to do some analysis.

Computation

Numerical solutions to your problem. At the bare minimum at least one simulation for when the equilibria are stable/unstable.

Parameterization

An important but somewhat glossed-over-in-this-course aspect of modeling. Pick a non crazy set of parameters, and if possible see if you can find any from the literature.