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## Project Goals

As much as possible we encourage students to take complete responsibility for design, construction and execution of experiments and models. We have provided some initial guidelines in the next section which will help budget time and set initial population densities and sugar concentrations. Students need to:

- Formulate the logistic model as well as an alternate model.
- Determine parameters and their units, as well as solutions for the models insofar as that is possible.
- Design experiments which will allow them to parametrize their models, including a protocol for data collection, standardization and a plan for turning measurements into estimated parameters.
- Design separate experiments for the purposes of validation, as well as have some initial concept of what analytic measures will be used to select between models or falsify them.
- Conduct experiments.
- Write up results in a complete lab report.

Like much science, this seems very straightforward in outline. In practice, the three classes which have worked through this protocol have all needed to reset at least once, often twice. For a `classic' experiment, results are remarkably unreliable. Overall we have felt that this lab prepares students very well for honest interaction between theory, experiment and understanding.



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*2000-07-31*