The **Midterm and Final Presentations** will test the ability to model a problem, interpret the solution, and communicate the results *effectively* and *efficiently*. The Midterm and Final Presentations depend on teamwork.

Below are guidelines for the teams and the reports.

**Teams**

1. Each team will consist of 3-4 people.
2. Changes of the teams during the semester will not be allowed, except in extreme circumstances. Any change must be approved by the instructor.
3. Each team member must participate in the project, but tasks can be divided up. Each presentation will have several parts - modeling, solution, simulation, interpretation, presentation.

**Basics of Mathematical Modeling**

1. State the Problem
2. Identify the goal of the problem and key quantities needed to reach the goal
3. Borrow from existing models and/or assess their applicability
4. Express the problem in mathematical statements and graphs
   a. Start simple
   b. Later add complexity
5. Solve the mathematical problem
6. Assess the solution - interpret in terms of the goals
7. Improvements to the model? Repeat steps 3-7 as necessary.
8. Answer the original problem statement

**Midterm Presentation**

1. Select a problem from a list of topics.
2. Presentations last 13 minutes.
3. Midterm Presentations will follow the same outline as the Final Presentation.
4. Presentations will be rated by the class and the instructor.
Final Presentation
1. You must write a proposal for the topic of the Final Presentation. Suggested areas for the Final Presentation will be made available. In most cases the topic of the Final Project will be different from the Midterm Project; exceptions must be approved by the instructor. The proposal for the Final Project is due on April 12.

2. Outline for the Proposal:
   a. Statement of the Problem: area of application, specific questions investigated.
   b. Techniques, e.g. methods studied in class, computer simulations, solution packages.
   c. References about previous work on the subject.
   d. Insight your study will provide.

3. Outline of Presentation
   a. Statement of the Problem - Words/Pictures/minimal equations
   b. Mathematical Model: Equations/Assumptions/Justifications
   c. Techniques/Tools Used
   d. Results of the Model: Solutions/Simulations
   e. Interpretation of the Results - Relate to Statement of the Problem
   f. Assessment of the Model: Strengths/Weaknesses