

## MODELING WORKSHOP IN MECHANICS

Physics Modeling Workshops are a structured inquiry approach to high school physics teaching that incorporates computer technology and insights from physics education research. Emphasis is placed on the use of basic models and modeling in mechanics.

Participants develop skills in fostering scientific discourse among students and in the assessment of student learning.

Each participant will design and carry out a series of investigations that use the Modeling Method. Participants will practice Socratic questioning techniques that will enable them to teach physics using the Modeling Method. Each participant will keep a daily journal book of problems solved, labs done, personal notes and reactions to activities and readings, and expected student difficulties and ways of addressing them.

This intensive workshop will run for 15 days, and will focus on topics in mechanics including motion, force, energy and momentum. More information about Modeling Instruction can be found at <http://modeling.asu.edu>.

### Objectives of the Modeling Workshop for **teachers**:

- To train teachers in the use of a model-centered, constructivist method of teaching and at the same time to improve their content knowledge in mechanics.
- To integrate computer courseware effectively into the physics curriculum.
- To establish electronic network support and a learning community among participants.
- To help participants to make better use of national resources for physics education.
- To strengthen local institutional support for participants as school leaders in disseminating standards-based reform in science education.

### Objective of the Modeling Method for **students**:

- To engage students in understanding the physical world by constructing and using scientific models to describe, explain, predict and control physical phenomena.
- To provide students with basic conceptual tools for modeling physical objects and processes, especially mathematical, graphical and diagrammatic representations.
- To familiarize students with a small set of basic models as the core content of physics or chemistry.
- To develop student insight into the structure of scientific knowledge by examining how models fit into theories.