Modeling Instruction Program Participant Courseware

This CD-R contains the following curriculum materials for the Modeling Instruction in High School Physics program:

1. the entire 1st-semester Mechanics curriculum (rev 2002) used in the Modeling I workshop.
2. a beta version of 2nd semester materials developed by participants in Phase I, II and III workshops, revised in the Summers of 2000 and 2001.
3. materials for Models of Physical Science (aka — Underpinnings),
4. an archive of the materials developed at the various phase II and III workshop sites.

1st semester – Mechanics

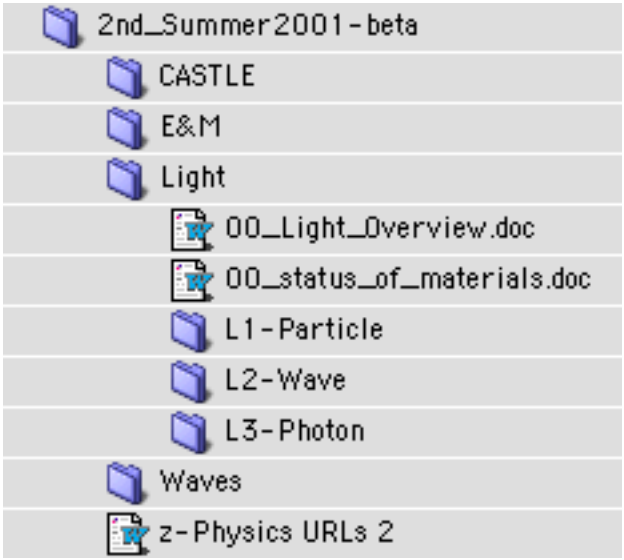
These materials are available in two formats:

- Word 98 for Macintosh — Most of these files can be open and printed by Word 97 or newer on Windows machines and by Word 98 or newer for Mac (or Appleworks 6.0 or newer). The chasm between platforms (Mac vs Windows) has narrowed significantly but has not yet been eliminated. Some minor pagination problems and some difficulties with graphics remain.
- PDF — These files can be read by Adobe Acrobat Reader on any platform. Should you have questions about the appearance of a file opened in Word, the pdf file will show you how the file was intended to appear. Furthermore, you can copy graphics from the pdf file and paste them into your document should you be unable to view the graphics in your word processor.

2nd semester-beta

Materials for 2nd semester high school physics curriculum have been under development since the Summer of 1996. Having learned the Modeling Method in the first summer workshop, participants have wrestled with the task of adapting existing curriculum materials so that they reflected a model-centered rather than a topic-centered approach to physics teaching. The Modeling Instruction Program assembled a group of workshop leaders for three weeks in Summer 2000 to work on the 2nd semester materials. These materials were field tested, then reviewed and revised again in Summer 2001. Further revisions have taken place after field testing in the 2001-02 school year.

The materials currently available are in Word 98 for Macintosh. These files are readily viewed by Word 97 for Windows (or newer) and can be opened by Appleworks 6.0 or newer.



The directory structure of these materials is shown at left. There are four major units, each of which has a number of sub-units. The **Overview.doc** file explains the organization of each of these curriculum units.

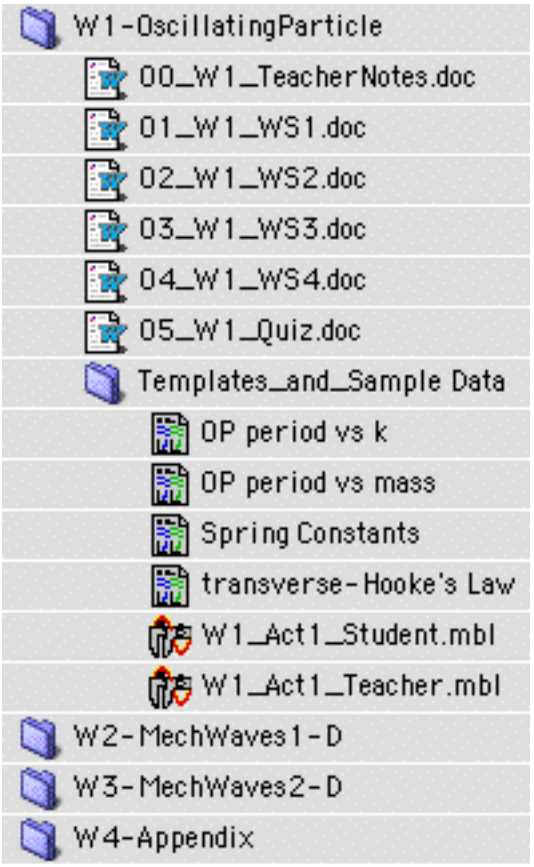
It must be said at the outset that the best way to learn how to use the materials in a unit is to participate in a 3-4 week summer workshop. We tried as best we could to make the structure of the underlying models as explicit as possible. To that end, a substantial amount of effort went into the **00_TeacherNotes document** for each of the units.

Caution: a careful examination of this document is essential for you to use the subsequent activities in a coherent way.

The **TeacherNotes** document is organized as follows:

- Instructional Goals (1-page list describing key features of the model(s) employed)
- Sequence (1-page list of the activities for the unit)
- Overview (2-4 page file describing the rationale for the selection of activities and sequencing)
- Instructional Notes (detailed description of the notes an instructor would want to read in order to make best use of the labs, demo, discussions and worksheets outlined in the Sequence)

We reasoned that teachers who had undergone Modeling training would be able to read the first three sections of the TeacherNotes file and get a sense of the direction we were suggesting for the unit. While the Instructional Notes section for most of the units is quite thorough, we recognize that further work needs to be done.



The directory structure of the Mechanical Waves & Sound unit is illustrated at left. The first two documents give an overview and the current status of the materials. As you can see, the Mechanical Waves and Sound unit consists of 4 sub-units.

The directory structure of the first of these: **W1-Oscillating Particle** is shown in greater detail. The various icons show that some of the files are Word documents, some are Graphical Analysis data files and some are Logger Pro experiment files.

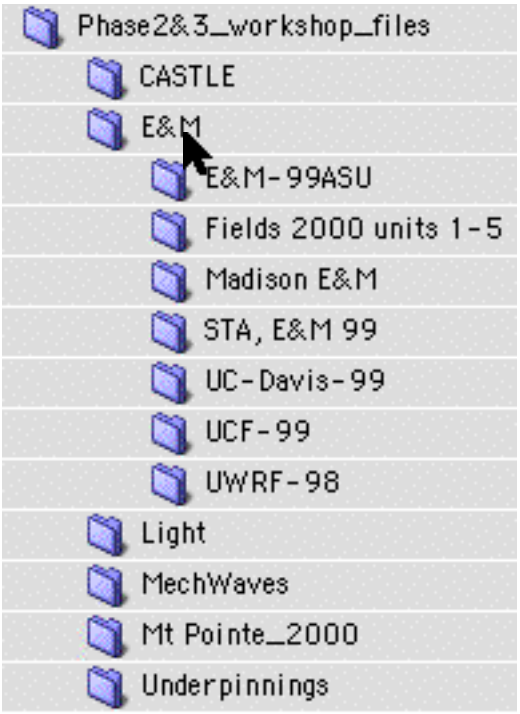
The files names are designed to make the sequence as clear as possible. Hence **03_W1_WS3.doc** refers to the 3rd worksheet in the first subunit in Waves.

We recognize that it is inevitable that some will disagree with the direction we have outlined. Others will wonder why we have not included certain materials. Some of these omissions were the result of careful consideration, but with over 200 MB of starting materials to consider, it is probable that we have overlooked some really worthwhile stuff. As professionals, you will have to decide what works best for your students in your classroom environment. This is why nearly all the raw materials are still here for your use (in the Phase2&3_workshop_files directory).

Models of Physical Science-beta

The materials in this folder are a result of the work of Action Research Teams working in the Summers of 2000-2001 to make a coherent curriculum for 9th grade physical science based on the Underpinnings materials developed by Phase 2 and 3 workshop participants. While these materials have been field-tested by teachers who worked on them, more work needs to be done before they are ready to be used by teachers not familiar with their development.

Phase2&3_workshop_files



In this folder can be found the original materials developed by the participants in the 2nd summer workshops in the Phase I, II and III workshops (1996-99). Participants from these workshops might find the materials from their Action Research Team to be useful in their own classrooms.

The diagram at left shows that these materials are organized first by topic, then by workshop site and date.

Work on these materials will continue gradually during the 2001-02 school year. Your feedback can further progress toward the goal of having a coherent curriculum for high school physics that will serve as a valuable resource for teachers familiar with the Modeling Method. You may direct inquiries, comments, kudos and gripes to dukerich@asu.edu.

Larry Dukerich
August, 2001