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# MODELING PHYSICAL SCIENCE I

## Physics/Astronomy 760

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Instructor:	Dr. Mark Lattery Halsey 351 920-424-7105 lattery@uwosh.edu
Meeting Time:	Three weeks prior to July 4. M-F, 8-11:30 a.m and 1-4 p.m.
Required Reading:	Lattery (2004). <i>Modeling Physical Science I Teacher's Manual</i>  Arons (1990). <i>A Guide to Introductory Physics Teaching</i> , Wiley
Credits:	3
Prerequisites:	Previous teaching experience and permission from the instructor.
Grading Basis:	Pass/Fail. Passing grade contingent on acceptable classroom participation and completion of all homework assignments.

### Course Description:

The Modeling Physical Science (MPS) course is part of a two-year professional development program for physics and physical science teachers. This course is the first of two courses funded by the Wisconsin ESEA (Title II) Program.

MPS goals are to:

- train teachers in the use of a model-based, constructivist method of science teaching and at the same time to improve their content knowledge in physics.
- integrate computer courseware effectively into the physics curriculum.

- establish a learning community among participants.
- help participants to make better use of national resources for physics education.
- strengthen local institutional support for participants as school leaders in disseminating standards-based reform in science education.

### **Schedule:**

The course content schedule is given below. In the first two weeks, teachers receive training in the modeling method of instruction (developed by Arizona State University) and bridging analogies (University of Massachusetts—Amherst). In the third week, teachers receive training in the Capacitor-Aided System for Teaching and Learning of Electric Circuits (developed by Smith College and Pacific University)

<i>Week</i>	<i>Unit</i>
1	Mathematical modeling
2	Newton's laws (force methods)
3	CASTLE Electricity

Other features of the course:

- Participants are supplied with a complete set of course materials and work through all the activities alternately in the roles of student or teacher.
- Student activities are organized into *modeling cycles* that engage participants systematically in all aspects of modeling. Students are guided unobtrusively through each modeling cycle, with an eye to improving the quality of student discourse by insisting on accurate use of scientific terms and clarity of expressed ideas and arguments.
- Lecturing is restricted to scaffolding new concepts and principles as needed.
- Arons reading: Chapters 1-4, 6-7, 12-13

### **Further Information:**

For complete information about the Modeling Physical Science program, please visit our web-site at: [www.phys.uwosh.edu/lattery/mps/mps.htm](http://www.phys.uwosh.edu/lattery/mps/mps.htm).