

Summer Modeling Institute in Physics



July 15th-26th
Monday-Friday 8:30-3:00

Birmingham-Southern College



Workshop Directors: Mrs. Emily Menard emenard@uab.edu
Dr. Michelle Houston mhouston@bcsk12.org

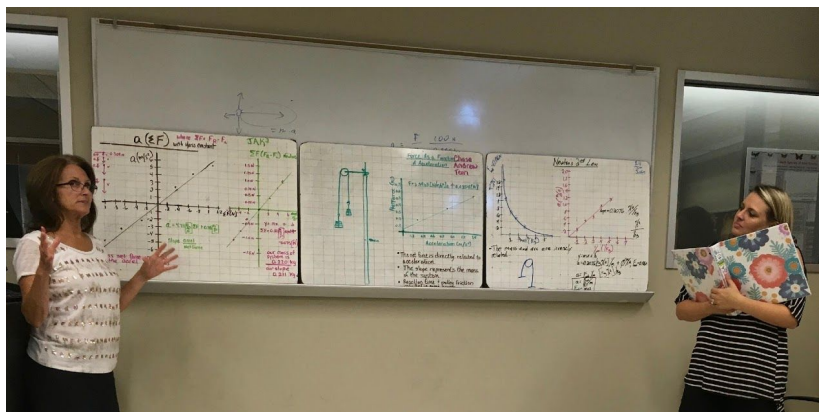
Physics 1 – Mechanics

Dr. Tim Burgess will take participants through several “modeling cycles” in hands-on/minds-on experiences that involve scientific reasoning, linear kinematics and dynamics. Working closely with colleagues, participants will practice assisting students in designing and implementing experiments, reasoning from the gathered data and then developing, modifying, validating and deploying scientific models.

Modeling Instruction™

Modeling Instruction™ helps teachers attain knowledge, skills and experience needed to benefit students and is the only high school science program recognized as *Exemplary* by the U.S. Department of Education. Modeling Instruction™ corrects many weaknesses of the traditional lecture/demonstration method, including fragmentation of knowledge, student passivity and persistence of naïve beliefs about the physical world. Unlike the traditional approach, in which students passively accept an endless stream of seemingly unrelated topics, Modeling Instruction™ applies structured inquiry techniques around a small number of scientific models, thus making the course coherent. Students learn science as scientists do – by *doing* science. When modeling, students:

- are encouraged to think scientifically by experimenting, collecting and analyzing data, communicating findings & drawing conclusions
- use the basic skills and practices of mathematical modeling, proportional reasoning, quantitative estimation and technology-enabled data collection
- use, test and validate student-created mental models
- evaluate and discard incorrect naïve concepts
- demonstrate improved reasoning as measured on numerous standardized assessments.



The National Science Foundation, Department of Education and independent studies support the assertion that modeling instruction raises the level of the science learned. More information on modeling instruction is available at: <http://modelinginstruction.org/>

Workshop Leader Dr. Tim Burgess

Dr. Burgess has been modeling since 1997 and has led numerous Modeling Physics Workshops for more than 16 years in Arizona, Tennessee, Mississippi, California and Alabama. He is a lifetime member of the American Modeling Teachers Association. Tim has won numerous awards in science teaching, was a Physics Specialist for the Alabama Science in Motion program, has read Physics Exams for the College Board and has authored articles in the "The Physics Teacher." Tim has worked in urban public high schools, independent private and Catholic high schools for four decades. In his last position as a department chair he oversaw a highly successful transition to "Physics First" as the new science sequence at his present school (and the positive impact that it had!).

Workshop Co-Leader Dr. Michelle Houston

Dr. Houston teaches physics and biology at Briarwood Christian High School. She has been modeling since 2013 and has co-led other Mechanics 1 workshops.

Registration

- Register at <https://www.ewebfife.com/prm/AMTA/calendar/event?event=2039>
- Registration fee is \$725 for 2 weeks on a first-come basis
- Includes all curriculum materials with copying privileges
- 60 hours of professional development
- Network of local physics teachers with whom to collaborate
- Enrollment is limited
- Registration deadline is May 18th

Graduate Credit

Up to 4 hours of graduate credit from Dominican University can be obtained upon the completion of the workshop at \$100/credit hour. If you are interested in getting graduate credit you need to sign up with Dominican University prior to the workshop starting.

Housing

Dorm rooms are available at \$50/night single occupancy and \$26/night double occupancy at the nearby University of Alabama at Birmingham.

Funding

Funding resources are at <http://modeling.asu.edu/Projects-Resources.html>; scroll down to "Grants for Instructional Technology, Improved Instruction, Modeling Workshops".