

## 2007 PROM/SE SUMMER SCIENCE INSTITUTE

Please join us for the PROM/SE Summer Science Institute. Spend time delving deeply within one content area in courses taught by experts in K-12 science education. Institute participants will develop a deeper scientific knowledge for teaching.

**WHO CAN PARTICIPATE?** PROM/SE Science Associates, as well as teachers from PROM/SE buildings.

**REGISTRATION DEADLINE:**

**April 19 for SMART and High AIMS teachers;  
May 4 for Calhoun, Ingham and St. Clair teachers**

**REGISTRATION:**

Please register early. Space is limited. Extra brochures and registration forms can be downloaded at [www.promse.msu.edu](http://www.promse.msu.edu). Return completed registration form to your PROM/SE site coordinator as indicated on the form.

**IS THERE A COST?** There is no charge to attend. A daily stipend of \$75 will be paid to registered participants who attend the entire day and sign in/out.

**HOTEL:** For those traveling more than 50 miles one-way, please contact your PROM/SE site representative for more details.

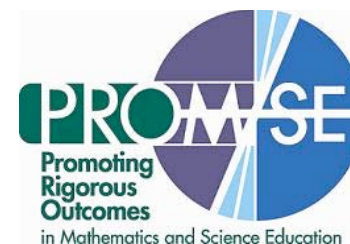
**CREDITS:** CEUs are available at no charge. Two university graduate credits (pending approval) are available for an extra fee. To be eligible for CEUs or credit, participants must attend the entire institute. University credit requires completion of extra assignments.

**ABOUT PROM/SE:** Supported by the National Science Foundation, PROM/SE is a comprehensive research and development effort to improve mathematics and science teaching and learning in grades K-12, based on assessment of students and teachers, improvement of standards and frameworks, and capacity building with teachers and administrators. PROM/SE has six partners in Michigan and Ohio: Calhoun ISD, MI; High AIMS Consortium, OH; Ingham ISD, MI; Michigan State University; SMART Consortium, OH; and St. Clair County RESA, MI. For more information about PROM/SE and a full calendar of learning opportunities, visit [www.promse.msu.edu](http://www.promse.msu.edu).



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For more information about PROM/SE and project activities, visit [www.promse.msu.edu](http://www.promse.msu.edu) or contact PROM/SE, Michigan State University, 236 Erickson Hall, East Lansing, MI 48824, Phone: (517) 353-4884, Email: [promse@msu.edu](mailto:promse@msu.edu)



## 2007 Summer Science Institute

**June 18-21**

**SMART**

Brecksville-Broadview Heights  
High School  
6380 Mill Road  
Broadview Heights, OH

**June 25-28**

**High AIMS**

Princeton High School  
11080 Chester Road  
Cincinnati, Ohio

**Aug 13-16**

**Calhoun ISD**

**Ingham ISD**

**St. Clair Co RESA**

East Lansing High School  
509 Burcham Drive  
East Lansing, Michigan

8:00 - 4:00 pm daily

Please join us for the PROM/SE Summer Science Institute, co-sponsored by Calhoun ISD, High AIMS Consortium, Ingham ISD, Michigan State University, SMART Consortium, and St. Clair County RESA.





## 2007 PROM/SE Summer Science Institute

### UNDERLYING PRINCIPLES

Summer Science Institute courses are developed around topics of greatest need as identified by data that were collected from PROM/SE districts including student performance measures and recent teacher surveys.

All of the courses are organized around an underlying structure of scientific inquiry and target specific subject matter. Each course engages participants in inquiry-based activities that promote deeper conceptual understanding and high cognitive demand. Time will be spent each day to reflect on what you learned, how you learned it, and how that might relate to your teaching.

The unifying theme of Systems (order and organization: biological, chemical, physical, universal) is a key theme across the PROM/SE summer courses. Systems are also an area where students consistently show a lack of comprehension and teachers identify as a need.

The unifying principle is Energy, a topic that has been shown to have many common misconceptions across the K-12 curriculum.

The strands of the PROM/SE Summer Institute that model the theme of **Systems** and the principle of **Energy** are:

**Strand 1 • Life Science: Energy & the Environment- Supporting Life**

**Strand 2 • Earth Science: Earth Processes, Features & Its Place in the Universe**

**Strand 3 • Physical Science: The Structure of Matter**

### ELEMENTARY COURSES

#### **Food Webs: There's More to Life Than Food**

All organisms require energy and matter to live and grow. How do they get their energy? What happens to that energy in the organism? How does the energy flow through an ecosystem? Join us as we dive into these questions and investigate the life processes (photosynthesis, respiration, and digestion) behind food webs.

#### **Earth Composition: Forming Rocks, Soil, and Water**

Rocks, soil, and water make up much of the Earth providing the structure for life. What are rocks? What is soil? How are these formed? What are systematic processes that create and sustain Earth's composition? These and other questions will be addressed through exploration of Earth's composition.

#### **Light: Making Sense of How We See Our World**

Light is all around us, but many people do not understand how light behaves to help us see objects and images. Participants will explore the behavior of light through a variety of investigations. Using ray, wave, and particle models, participants will push our understanding of light and its ability to illuminate our world.

### MIDDLE SCHOOL COURSE

#### **Earth Processes: What on Earth is Changing?**

The Earth is constantly changing. Some of the changes are abrupt such as tsunamis and earthquakes. Other changes on Earth happen slowly over thousands or millions of years such as the uplift and erosion of mountains. This course focuses on exploring changes to the interior and the exterior of Earth.

### COMBINED MIDDLE/HIGH SCHOOL COURSES

#### **Life Processes and the Environment: The Living World in Our Neighborhood**

Participants will use ecological field studies of two local plots (one strongly affected by humans and the other less affected) to investigate the connections that tie these plots together from the cellular to the global level. As participants investigate the structure and function of the organisms in these plots, we will consider how they are tied together by matter, energy, and genetic information. The core life processes essential to sustaining the system will be explored in-depth to better understand the impact of changes due to natural selection and human influences.

#### **Structure of Matter: Matter Matters**

Continuing with the professional development theme from the 2006-07 academic year, this course continues the study of matter from real-world relevancy to accepted science theories at the molecular level. Particular attention is paid to the Ohio and Michigan Standards and Benchmarks, new strands in the AAAS Atlas of Science Literacy, and the alignment of the concepts through grades 5-12. The goals of the course will be met and modeled through investigations, questioning techniques, explicit instruction, web-based resources, and relevant examples in life, earth, and physical science, and mathematics.

### HIGH SCHOOL COURSE

#### **The Universe: How Do We Know the Distances to the Stars and Beyond?**

##### **(\*Note- Updated Course Description)**

The size and age of the Universe, and the distance of the stars and the galaxies fascinate and awe people of all ages. In a typical introductory astronomy course one might hear the following: "The nearest galaxy to our Milky Way is Andromeda, 2.7 million light years away." Or... "The Universe is 13.7 billion years old!" Many simply accept these huge numbers as fact. The more astute student asks, "How do they figure that out?" This course will help answer that question by involving the participants in a series of hands-on activities.

