Teacher Professional Development

Global Change

Teacher Institute
~ June 25-29, 2007 ~

$600 Registration includes 3 credits!

Application Deadline
Friday, May 25, 2007
20 spaces available!

This Institute is partially funded by a grant from the National Science Foundation (DEB 0315138)

Conducted by the Ecosystem Science Center of the School of Forest Resources & Environmental Science at Michigan Technological University and coordinated by the Western Upper Peninsula Center for Science, Mathematics and Environmental Education.
About the Institute

This intensive five-day Institute will prepare you to engage your middle and high school students in a real-world study of the effects of global change on ecosystems, including the impacts of climate change, elevated carbon dioxide and ozone levels, nitrogen saturation, acid rain, and invasive species. Through lecture, hands-on data collection, field trips, and lab experiences, educators will obtain new knowledge and skills. Teachers will also be trained in and receive the new Michigan Air Quality unit (easily adapted to other states). National and Michigan content standards for mathematics; life, earth and physical sciences; and technology will be addressed.

The Institute will be taught by internationally-recognized faculty and researchers from Michigan Technological University (MTU) School of Forest Resources and Environmental Sciences, along with guest scientists from the University of Michigan and the USDA Forest Service’s Forestry Sciences Laboratory. Another benefit of the institute is the opportunity to interact and collaborate with teachers from across the Midwest and the United States. To date, teachers have hailed from California, Connecticut, Maryland, Ohio, Michigan, and Wisconsin.

Participants will visit the fascinating Aspen FACE (Free-Air Carbon Dioxide Enrichment) Experiment research site (http://aspenface.mtu.edu/) at the Harshaw Experimental Forest near Rhinelander, Wisconsin (see photo on cover) where the effects of elevated CO2 and ozone on forest productivity are clearly observed.

Participants will also visit the new subterranean rhizotron research facility where scientists study carbon sequestration, the process by which plants “inhale” CO2 from the atmosphere and store carbon in the soil. The $500,000 tunnel is paneled with glass windows and stretches 75 feet into the hillside exposing roots, fungi, insects and worms without disturbing the soil.

The Institute will provide teachers with standards-based professional development and the time to plan, discuss, and develop new classroom curricula. Participants will receive a course notebook, handouts, a CD with ready-to-use powerpoint presentations from the course, and other curriculum-support materials.

About Michigan Technological University

Michigan Tech is located in Houghton, Michigan, along the shores of the Portage Waterway. Houghton is a quaint town with roots in the historic copper mining days of the mid-19th century. While every season is a great time to be in Houghton, summertime is relaxed and the weather refreshingly cool. Stroll along the waterfront, get an ice cream or cappuccino, or take in a movie. There’s hiking and mountain biking on the awesome MTU Recreational Trail System. Or hike up Mont Ripley Ski Hill or along Lake Superior at McLain State Park, or take in a round of golf at the Portage Lake Golf Course. Each evening, a van will take you on a new adventure (optional) of the Keweenaw Peninsula. To learn more about MTU visit: http://www.mtu.edu.
Course Credit & Requirements

Participants will earn three semester hours of graduate credit (FW5641/ED5641) from Michigan Technological University. Course requirements are to:

- Complete assigned readings and identify learning objectives for their students prior to the course.
- Participate fully in the entire Institute, including lecture, field trips, and evening programs.
- Keep a field journal during the Institute.
- Design a teaching unit with three to five lessons related to global change following the rubric provided and meets Michigan (or national) content standards. Participants should plan to implement the unit during the 2006-07 school year. Due August 31, 2007.

Planned Course of Study (18 credits)

The credits earned from this Institute can be applied towards an 18 semester-hour planned course of study for teachers working towards their Michigan Professional Certificate. Michigan Tech is a great place to design your planned course of study, with so many great summer institutes available. For more information, contact Judy Anderson at the MTU Department of Education at 906-487-2460 or juanders@mtu.edu.

Master of Applied Science Education

Graduate credits may also be applied towards Michigan Tech’s Master of Science in Applied Science Education program. For more information about the Master’s program, contact Dr. Brad Baltensperger at 906-487-2460 or brad@mtu.edu. Participants interested in pursuing an advanced degree at Michigan Tech in a field other than education, should contact the department of interest (http://www.mtu.edu/).

Institute Instructors

Dr. Kurt Pregitzer, Ecosystem Science Center, School of Forest Resources & Environmental Science, Michigan Technological University, is well-known nationally and internationally for his research on global change. He received the Barrington Moore Award for life-long advancement of our fundamental understanding of forest biology and was recently recognized by Tomson’s ISI as one of the world’s most highly cited researchers in the area of environmental biology. Dr. Pregitzer has published more than 140 peer-reviewed scientific papers in the world’s top scientific journals. In addition to research, he teaches forest ecology at Michigan Tech.

Dr. Andrew Burton, Ecosystem Science Center, School of Forest Resources & Environmental Science, Michigan Technological University, teaches ecosystem measurements, geomorphology, and basic field ecology skills. His research examines the effects of global change factors (climatic variation, nitrogen deposition/acid rain, elevated atmospheric CO2 and ozone) on carbon and nutrient cycling, forest health, productivity, and soil processes. He has published more than 38 papers in top scientific journals.

Dr. Donald Zak, School of Natural Resources and Environment, University of Michigan, runs a stable isotope laboratory that examines the effects of global change factors on Lake States ecosystems. Dr. Zak’s work is instrumental in tracking changes in the flow of carbon and nitrogen through terrestrial ecosystems, including the Aspen FACE research site and the Michigan Gradient Study.

Dr. Erik Lilleskov, Ecosystem Science Center & USDA Forest Service North Central Research Station, is a research ecologist and expert on mycorrhizae, the symbiotic fungi critical to the health of most plants. He investigates how global change will influence the fungi that control soil food webs and forest health, and is an expert on edible fungi. Lilleskov also examines the role of exotic earthworms in the forest ecosystem.

Dr. Janet Vail, Annis Water Resources Institute, Grand Valley State University, holds a Ph.D. in Science Education with an emphasis on Environmental Education from Western Michigan University. She manages the outreach and education programs at the Annis Water Resources Institute, is a trainer for the GLOBE program, and is the author of Michigan’s new Air Quality Unit for middle/high school students.
**General Information**

**Cost**

Registration fee for the 5-day Institute is $600, which includes four nights lodging, all meals, field trips, instructional materials, and **three graduate credits from Michigan Tech University**. (The actual cost of the Institute is $1800. A departmental tuition stipend and NSF support reduces participant’s total cost to **only $600** for both Michigan and out-of-state participants). **Payment of the full registration fee is due Friday, June 8.** Make checks payable to ‘Michigan Technological University.’

**Location and Accommodations**

The Upper Peninsula forests of maple, cedar, jack pine, spruce, fir, and aspen provide the ideal setting for this exciting learning opportunity. Participants will receive four nights lodging in MTU’s newly remodeled Wadsworth Hall in a single room with private bath and receive all of their meals. Nearby Michigan Tech Trails and downtown Houghton are within easy walking distance.

**Getting to Michigan Tech**

Michigan Technological University is located along US 41 just east of downtown Houghton, MI (pop. 7,000). Houghton is served daily by Northwest Airlines from Minneapolis through the Houghton County Airport in Hancock. The nationwide reservations number for Northwest is 800-225-2525, or visit the Northwest Airlines website at: [www.nwa.com](http://www.nwa.com). Commercial taxi service is available from the airport to the Michigan Tech campus for approximately $20 per person by calling Neil’s Taxi Service at 906-482-5515.

**Websites for More Information**

MTU Ecosystem Science Center: [http://ecosystem.mtu.edu](http://ecosystem.mtu.edu)

MTU School of Forest Resources & Environmental Science: [http://forest.mtu.edu](http://forest.mtu.edu)

Michigan Technological University: [www.mtu.edu](http://www.mtu.edu)

Western U.P. Math/Science Center: [www.wupcenter.mtu.edu](http://www.wupcenter.mtu.edu)

Tourism information: [www.thekeweenaw.com](http://www.thekeweenaw.com)

**Questions**

For more information, contact course coordinator Joan Chadde at 906-487-3341 or [jchadde@mtu.edu](mailto:jchadde@mtu.edu).

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**How to Apply**

Send completed applications by email or postal mail to:

Joan Chadde, Course Coordinator
Western U.P. Center for Science, Math & Environ. Education
105 Dillman Hall, Michigan Technological University
1400 Townsend Dr., Houghton, MI 49931
Tel: 906-487-3341 Fax: 906-487-1620

Application forms are available on the web at:

- [http://forest.mtu.edu](http://forest.mtu.edu)
- [http://wupcenter.mtu.edu](http://wupcenter.mtu.edu)
- [http://www.ed.mtu.edu/pd.html](http://www.ed.mtu.edu/pd.html)

Application deadline is Friday, May 25. Participants are accepted on a first-come basis. **Participants’ registration will be confirmed by email as their applications are received. Limited to 20 participants.**

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**Earn 3 more MTU graduate credits!** Attend the **Forest Ecology & Resources Teacher Institute from July 16-20, 2007.** Application forms and information are available by contacting [jchadde@mtu.edu](mailto:jchadde@mtu.edu).