Global Change

Teacher Institute
~ July 17-21, 2006 ~

$600 Registration includes 3 credits!

Application Deadline
Friday, June 30, 2006
20 spaces available!

This Institute is made possible, in part, by a grant from the National Science Foundation Grant DEB 0315138

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

This intensive, interactive 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 climatic change, elevated carbon dioxide and ozone levels, nitrogen saturation, acid rain, and exotic species invasions. Through lecture, hands-on data collection, field trips, and lab experiences, educators will obtain new knowledge and skills. 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 researchers from the 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.

Participants will visit the 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.

The Institute will provide teachers with standards-based professional development and the time to plan, discuss, and reflect on their teaching. 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, MI, along US 41, on 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 or mountain biking on the awesome MTU Recreational Trail System within walking distance of our dorm. 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. Every 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 and submit a teaching unit with three to five lessons related to global change following the rubric provided. The unit should incorporate effective teaching strategies and meet Michigan (or national) content standards for two or more subject areas. Participants should plan to implement the unit during the 2006-07 school year. Due August 31, 2006.

Professional Certificate

The credits earned from this Institute can be applied towards an 18 semester-hour planned course of study for teachers working toward their Michigan Professional Certificate. For more information about designing a planned course of study, 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, teaches forest ecology at Michigan Tech. He 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.

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. William (Bill) Holmes, School of Natural Resources and Environment, University of Michigan, runs a stable isotope laboratory at UM and uses the facilities to examine the effects of global change factors on common Lake States ecosystems. Dr. Holmes work is instrumental in tracking changes in the flow of carbon and nitrogen in major research projects, such as the Aspen FACE project in Rhinelander, WI and the Michigan Gradient Study.

Dr. Erik Lilleskov, Ecosystem Science Center & USDA Forest Service North Central Research Station, is an expert on mycorrhizae, the symbiotic fungi that are critical to the health most plants. He investigates how global change will influence the fungi that control soil food webs and forest health. He is an expert on edible fungi.

Dr. Kate Bradley, Ecosystem Science Center, School of Forest Resources & Environmental Science, Michigan Technological University, studies above ground interactions between plants and insects and below ground links between plants, soil microorganisms, & nitrogen availability. She was a resident scientist in the Lincoln Public Schools (Nebraska) during her graduate studies.

Dr. Janet Vail, Annis Water Resources Institute, Grand Valley State University, manages the outreach and education programs at AWRI and holds a Ph.D. degree in Science Education with an emphasis on Environmental Education from Western Michigan University. She is the author of the Michigan Environmental Education Curriculum Support (MEECS) Air Quality Unit.
**General Information**

$600 Registration includes 3 graduate credits!

**Cost**

Registration fee for the 5-day Institute is $600, which includes room, meals, field trips, instructional materials, and three graduate credits from Michigan Tech University. (The actual cost of the Institute is $1800. A departmental 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 30. Make checks payable to ‘Michigan Technological University.’

**Location and Accommodations**

Forests of maple, cedar, jack pine, spruce, fir, and aspen provide the ideal setting for this exciting learning opportunity. Participants will stay on campus in MTU’s newly remodeled Wadsworth Hall in a single room (private bath down hall) and receive all of their meals. Participants may arrive the day before, or stay the day after, at no additional charge (see application form). Participants may reserve a room for additional nights by contacting Jim Schultz, coordinator of MTU Residential Operations, at 906-487-2684 or email: jschultz@mtu.edu

**Transportation**

Michigan Technological University in Houghton, MI is served daily by Northwest Airlines from Minneapolis through the Houghton County Memorial Airport in Hancock. The nationwide reservations number for Northwest is 800-225-2525, or visit the Northwest website: www.nwa.com Commercial taxi service is available from the airport to the Michigan Tech for a cost of 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/

MTU School of Forest Resources & Environmental Science: http://forest.mtu.edu

Michigan Technological University: www.mtu.edu

Western U.P. Math/Science Center: www.wupcenter.mtu.edu

Tourism information: www.thekeweenaw.com

**Questions**

For more information, contact course coordinator Joan Schumaker Chadde at 906-487-3341 or jchadde@mtu.edu.

---

**How to Apply**

Send completed applications by email or postal mail to:

Joan Schumaker 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://wupcenter.mtu.edu
- http://www.ed.mtu.edu/pd.html

Application deadline is Friday, June 30. Participants are accepted on a first-come basis. Participants’ registration will be confirmed by email as their applications are received. Limited to 20 participants.

---

**Earn 3 more MTU graduate credits!** Attend the Forest Resources & Environmental Sciences Teacher Institute from June 25-29, 2006. Application forms and information are available by contacting jchadde@mtu.edu.