

Earth Science Institute

for
Middle and High School
Science Teachers

Classroom Applications of
**Mineral Exploration,
Mining,
Mineral Recovery,
and Use**

July 14 – August 1, 2003
and

July 19 – July 30, 2004



program sponsored by
Tennessee Technological University
Cookeville, Tennessee

Michigan Technological University
Houghton, Michigan

with major support from The National Science Foundation

Overview

The Earth Science Institute utilizes mineral science and mineral processing to enhance the teaching of science in middle and high schools. Teachers will be involved in hands-on, discovery-based activities that integrate concepts in math, physics and chemistry with elements of social science. Institute programs comply with the National Science Education Standards. Teachers will receive six graduate education credits upon completion of the Institute. Three credits are awarded each summer. While at the institute, teachers will be required to prepare individual in-depth lesson plans or a unit plan based on Institute topics.

Science teachers at middle and high schools are invited to submit an application for Institute enrollment. Space is limited to 24 teachers per year. Participants will form a class of teachers with varying years of teaching experience from newly-certified to master teacher level.

Course Schedule

In general, daily sessions will be held from 8:00 am to 5:00 pm Monday through Friday. Some field trips may begin as early as 7am and end in the early evening.

Research investigations, laboratory experiments, and field trips are an integral part of the Institute and include visits to study geology, surface and underground mining, mineral processing, and related industrial activities. Participants will conduct drilling and blasting in an underground mine to free mineral specimens for collecting. These activities and laboratory experiences involve dusty, noisy, or damp situations. Participants should prepare accordingly.

Participating teachers are expected to return to the Institute in 2004 for two weeks to share teaching experiences with colleagues, and to participate in advance and follow-up work.



Graduate Credits

Michigan Technological University will grant six semester hours of graduate-level, certification credit to those who complete both sessions of the Institute. Three credits will be awarded at the end of each summer session. The credits are accepted by the State of Michigan in approved course of study programs and are generally accepted by other states. They may also be applied toward obtaining a Master's degree in Education from Michigan Technological University.

Michigan Technological University is not responsible for meeting individual deadlines for credits toward teaching certification and/or salary increases. Official transcripts for current course work will be available upon request approximately two weeks after completion of Institute attendance and participation requirements.

Teacher Commitments

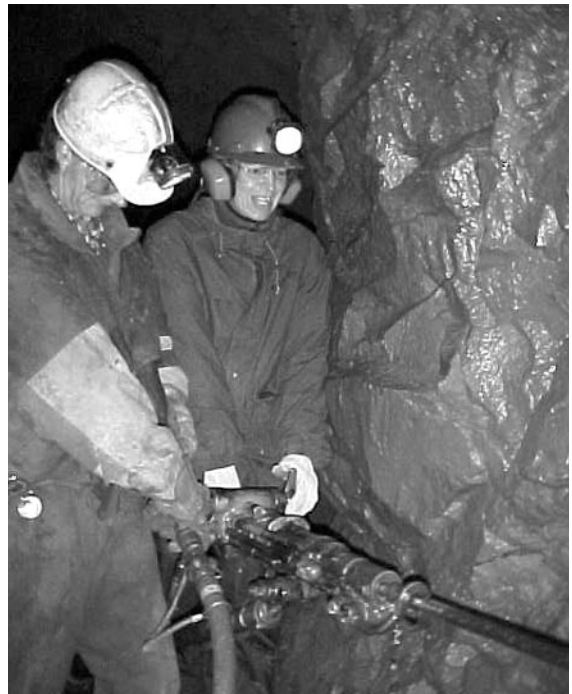
- Attend Institute sessions for three weeks during summer 2003 (July 14 - August 1) **and** for two weeks during summer 2004 (July 19 - July 30)
- Develop and implement curricula and classroom plans and activities incorporating materials from the Institute
- Maintain a journal of experiences resulting from Institute attendance
- Share experiences and materials with colleagues
- Participate in Institute assessment and academic year workshops
- Prepare individual lesson plans and group unit plans based on Institute topics while attending.



Participant Stipends and Expense Allowance

A stipend of \$60 per day (\$300 per week) will be paid to each participant while in attendance at the Institute. Transportation, accommodations, and meals will be provided. Participants will also receive transportation reimbursement for a yearly round trip from their place of residence to Houghton at the rate of 32.5 cents per mile. Participants need not remain in residence during the week-end. Recreational activities will be available for those remaining on the University campus during evenings and over weekends. Weekend room and board will be provided at no cost. Accommodations will be available for weekend guests at a nominal charge.

Each participant will be provided safety footwear, hard hats, hearing protection, and safety glasses. Participants are encouraged to bring rock hammers and hand lenses.





Earth Science Institute

Michigan Technological University/Department of Educational Opportunity

103 Alumni House

1400 Townsend Drive

Houghton, MI 49931-1295

How will the Earth Science Institute benefit you?

- Take-home materials relating to mineral exploration, mining, mineral recovery and use, careers, and environmental responsibility—classroom materials, model lesson plans, manuals, workbooks, mineral kits.
- Formal professional development sessions in assessment and leadership
- Graduate and certification credits
- Field experiences, research projects and laboratory sessions
- Participant-prepared lesson plans and unit plans.
- Colleague-shared classroom experiences.

For Additional Information:

Registration and Housing: Lori Witting, Conference

Coordinator, (906) 487-2263 or lori@mtu.edu

Program Content: Dr. Francis Otuonye, Program Director,

(931) 372-3374 or fotuonye@ntech.edu

Visit our web site at iweb.ntech.edu/tesi/nsfesit.html

Apply Early

Application deadline **March 14, 2003**

Space is limited to 24 teachers

Session 1: July 14 – August 1, 2003

Session 2: July 19 – July 30, 2004