



ESMIS

Educators' Science &
Mathematics Institute Series:
Applied Mathematics

January 2005 - June 2006

Applications are due by **Wednesday,
December 1, 2004**

Selections and notifications will be made
by **December 10, 2004**

10 graduate credits for \$400!

Sponsored by Michigan Technological
University (MTU), Western Upper
Peninsula Center for Science,
Mathematics and Environmental
Education (WUPCSMEE), Grand Rapids
Area PreCollege Engineering Program
(GRAPCEP), and the Kalamazoo Public
Schools and Pontiac School District.

Funded by a Michigan Department of
Education Improving Teacher Quality Grant
to Michigan Technological University.



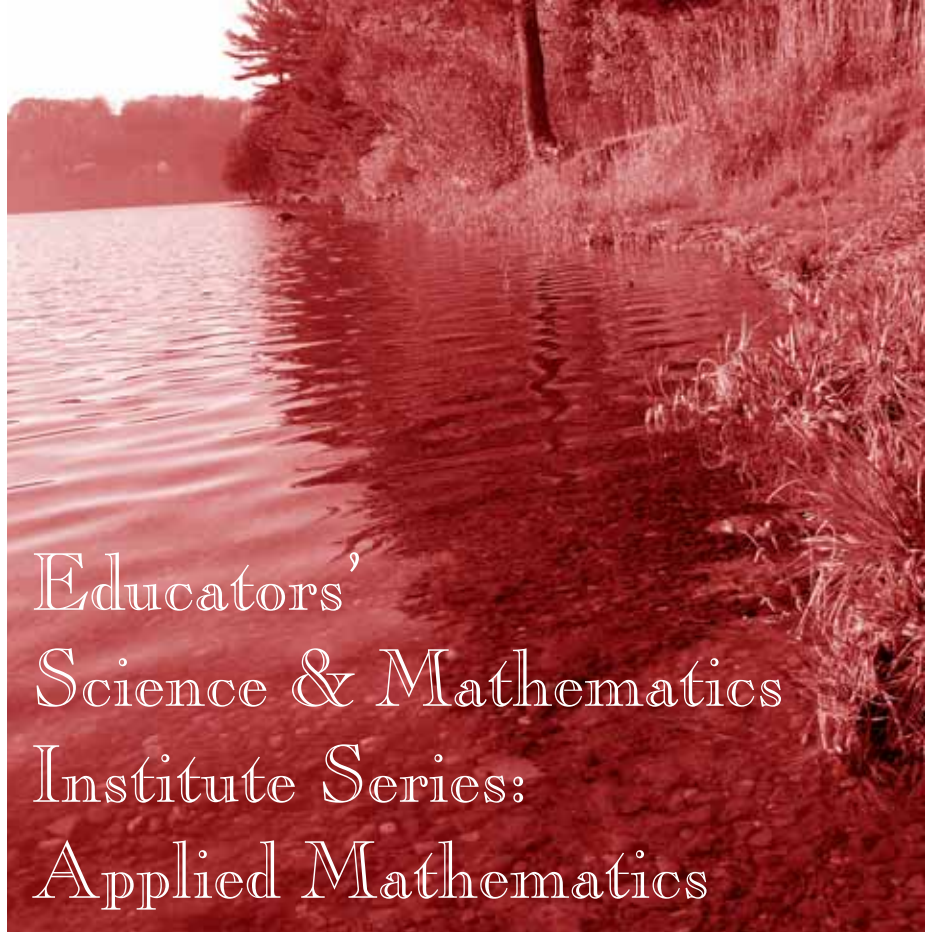
The major components of the 2005-2006 Educators' Science & Mathematics Institute Series: Applied Mathematics (ESMIS) focus on improving mathematics education for all students. ESMIS consists of two intensive, graduate level Summer Institutes, four academic year Workshops, as well as a web-based course and a spring Practicum.

- **Academic year Workshops** (Connecting with the Learner I and II, Understanding Cultural Diversity, Meeting the Grade Level Content Expectations) provide teachers with tools to assist them in fully engaging a diverse classroom and strengthening pedagogy.

- **Spring Practicum and the web-based course** offer the opportunity to implement action research as a method to assess teaching and learning, and improve evaluation and assessment.

- **Laboratory-based experiential Summer Institutes** (Exploring Mathematics Through Engineering Applications I & II) will enrich content knowledge and increase understanding of the STEM disciplines, especially engineering.

The ESMIS project includes approaches that support effective classroom learning and teaching by assuring that all students have equitable learning environments, placing an emphasis on inquiry-based learning and in-depth understanding of core concepts, and providing tools to measure student achievement. ESMIS provides opportunities to build teacher knowledge and skills, and offers tools to self-assess teaching in order to ensure continuous improvement and increase student learning. This approach will help teachers create learning communities that link their learning to state and national curriculum frameworks, and school improvement goals. Our model for professional development recognizes the guidelines of the National Staff Development Council's Professional Development Standards.



Educators' Science & Mathematics Institute Series: Applied Mathematics

“It’s a nice model to be able to come up with ideas for mathematics by actively exploring the discipline yourself ... all you have to do then is take your students through a similar experience.”





In order to ensure that fundamental changes will occur in curriculum, instruction, assessment, and student achievement at our partner schools, the ESMIS program will utilize the following strategies with teachers:

- a) inquiry-based teaching and learning
- b) interdisciplinary connections between mathematics and science
- c) study groups and critical friends
- d) examining student work
- e) mentoring and coaching
- f) creating an effective learning climate (equity in the classroom)
- g) assuring action research and use of strategies from successful models

Each Institute/Workshop is taught by Michigan Tech faculty, K -12 master teachers, and/ or invited experts.



Courses & Credits

Spring 2005 (1 Graduate Credit*)

Workshop #1: Meeting Grade Level Content Expectations* — full day

Workshop #2: Connecting with the Learner I* — full day

Workshop #3: Understanding Cultural Diversity* — full day

Workshop #4: Connecting with the Learner II (required, not part of graduate credit) — full day



Summer 2005 (2 Graduate Credits)

Institute #1: Exploring Mathematics Through Engineering Applications I — 1 week



Fall 2005 (2 Graduate Credits)

On-line Course: Science Education Research Methods/Action Learning and Research — 14-week semester



Spring 2006 (1 Graduate Credit**)

Practicum: Implementation and Assessment of Summer Institute teaching units**



Summer 2006 (4 Graduate Credits)

Institute #2: Exploring Mathematics Through Engineering Applications II — 2 weeks

General Information

Application deadline: **December 1, 2004**

Notification of Acceptance in the program:
December 10, 2004

Selection Criteria

Enrollment is limited. Applications are reviewed on a competitive basis. Applicants are selected based on their completed application. A panel of educators will select fellows. The Program is limited to 24 participants. Selected fellows will be notified by December 10, 2004.

Cost

\$400 per person for all activities

Institute Requirements

If selected to attend the Educators' Science and Mathematics Institute Series – Applied Mathematics, I agree to all of the following:

1. Submit a letter of support for participation with my application from the appropriate administrator.
2. Read and respond to all preparatory materials and communications prior to the Institutes/Workshops.
3. Consent to the release of my name, address, and e-mail address to other participants of the Institutes.
4. Fully participate in each day of the Institutes and Workshops.
5. Meet the requirements of the syllabus for each course listed.
6. Understand that my final teaching unit may be published in electronic or print format.

Why participate?

- Receive 10 graduate credits
- Apply the credits to your planned program of study leading to a professional certification
- Apply the credits as electives or core courses to Michigan Tech's M.S. in Applied Science Education or other graduate programs
- Develop your expertise in designing effective teaching and learning experiences
- Improve your ability to integrate subject matter across the disciplines
- Design a teaching unit based on the Michigan Curriculum Framework Standards that engages students in real world applications of mathematics
- Receive a \$200 stipend at the end of coursework
- Some travel stipends are also available
- Some support to present at regional and national conferences available



Educators' Science and Mathematics Institute Series
Michigan Technological University
Department of Educational Opportunity
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