Professional Development for Teachers—The 2006-08 Educators’ Professional Development Institute Series (EPDIS): Statistics and Probability

- Applications are due by November 13, 2006.
- Selections and notifications will be made by November 20, 2006.
- Earn 11 graduate credits.
- Cost: $400.

Sponsored by
Michigan Technological University
Western Upper Peninsula Center for Science, Mathematics, and Environmental Education
Grand Rapids Area PreCollege Engineering Program
Kalamazoo Schools
Detroit Public Schools/Detroit Area PreCollege Engineering Program Schools
Beecher Community Schools

Funded by
A Michigan Department of Education Improving Teacher Quality Grant to Michigan Technological University
Summary—
EPDIS combines short workshops and learning groups during the academic year with a two-week institute during summer 2007 and a two-week institute in summer 2008. Periodically, videoconferencing will allow participants to interact during the academic year. In addition, there will be three optional professional development activities for a limited number of participants.

Opportunity—
EPDIS: Statistics and Probability will focus on strengthening the ability of teachers in partner schools to engage students in meaningful problem solving and to serve as role models and mentors for new and pre-service teachers. The short-term goals of EPDIS are to—

- Increase and deepen teachers’ knowledge of statistics and probability
- Improve teachers’ ability to convey knowledge and applications of statistics and probability in the classroom
- Ensure that the goals of the Michigan Curriculum Framework (MCF) and national standards are met by partner teachers and schools
- Develop teachers’ confidence to lead local and statewide collaborative work to improve teaching and learning
- Understanding of diverse perspectives and their use of interdisciplinary approaches
- Ability to integrate technology for effective learning

Advantages—
The EPDIS: Statistics and Probability project will include approaches that support effective teaching for meaningful and relevant learning. EPDIS will focus on strategies to create equitable learning environments, engage students in inquiry-based learning, and develop an understanding of core concepts.

It will provide opportunities to build teacher knowledge and skills and provide tools to self-assess and reflect on teaching practices in order to ensure continuous improvement and increase student learning. This approach will help teachers create learning communities, link learning to state and national curriculum frameworks, and connect to community needs and school-improvement goals. It will encourage teachers to take leadership roles in their schools and state.

During the 2006-07 school year—
Participants will attend a workshop on High School Content Expectations as they relate to statistics and probability. This workshop will focus on the analysis of test data and enacted curriculum to find student achievement gaps. From these, each teacher will develop a professional development plan that highlights the areas of instruction or content to focus on during the remainder of EPDIS.

Workshops will be held at two to three sites to maximize access for participating teachers. The program will also offer an online course which engages participants through interactive technology in reading and discussing how students learn to think about statistics, common misconceptions that students hold about statistics, teaching for understanding, building on students’ prior or intuitive knowledge, changing mathematics curricula, learning strategies, and diversity issues.

During summer 2007—
Teachers from partner schools will participate in a two-week intensive institute on Michigan Tech’s campus. Project leaders have designed a program to strengthen teachers’ content knowledge in statistics and probability.

An introductory session, “Dealing with Cultural Diversity,” led by Dr. Marvel Lang of Michigan State University, will help participants understand the nuances and perspectives of cultural diversity. It will sensitize participants to the need to recognize the current and future diversity in the classroom and larger community and provide participants with information on strategies to deal successfully with the nuances of cultural diversity every day.
The institute, “Statistics and Probability,” will strengthen teachers’ understanding of statistics and probability, while at the same time modeling pedagogical techniques that can be used to teach such topics at the high school level. The course will focus on the expectations outlined in the Data Analysis and Probability Standards for Grades 9–12 (NCTM, 2000) and the Michigan High School Mathematics Content Expectations.

**During the 2007-08 academic year—**

Participants will engage in “Lesson Study,” an intensive method of improving instruction by examining the effectiveness of lessons in engaging students in meaningful learning. At least three groups of teachers will be established, based upon their geographic location. Each group will focus on how students react to a lesson through observation. The group will plan a lesson that one member teaches to his/her students, while other group members observe how students are learning and where problem areas exist. The group then uses its observations to improve the lesson, which can be used by each member with his/her students.

**In the second summer 2008—**

Teachers will attend a two-week institute that integrates statistics and engineering applications, including scheduling and estimating, quality control, and stress analysis.

Teams of teachers will design, analyze, build, and test truss bridges. They will also analyze water quality data and computer-based data on climate change. Applications of these materials in individual classrooms will be refined, technologies to enhance learning will be explored, and STEM careers will be discussed.

**Notes—**

The summer institutes at Michigan Tech will utilize the University’s unique resources, facilities, faculty, and learning environment.

The online education courses will be available during the second academic year. The optional summer courses are primarily field-based, and previous participants will be eligible for stipends if all seats are not claimed by participants in this program.

**Selection criteria—**

Enrollment is competitive and is limited to eighteen participants.

**Credit—**

Earn 11 graduate credits.

**Sponsors—**

Michigan Technological University, Western Upper Peninsula Center for Science, Mathematics, and Environmental Education, Grand Rapids Area PreCollege Engineering Program, Kalamazoo Schools, Beecher Community Schools, and Flint Public Schools. Funded by a Michigan Department of Education Improving Teacher Quality Grant to Michigan Tech.

**Educators’ Professional Development Institute Series**

**Department of Educational Opportunity**

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Apply Now!
## Plan-Objective and Timeline: Statistics and Probability

<table>
<thead>
<tr>
<th>Core Courses</th>
<th>Activity</th>
<th>Objectives</th>
<th>How/Where/#Teachers</th>
<th>Time Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2006</td>
<td>Program Orientation</td>
<td>Collaborative Leadership</td>
<td>Live/3 sites/18 teachers</td>
<td>3 hours</td>
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<tr>
<td>November 30, 2006 or December 1, 2006</td>
<td>High School Content</td>
<td>MCF &amp; National Standards</td>
<td>Live/3 sites/18 teachers</td>
<td>3 hours</td>
</tr>
<tr>
<td>Spring Semester 2007</td>
<td>Web CT Reflections</td>
<td>Diverse Perspectives</td>
<td>Online/MTU/18 teachers</td>
<td>1 credit</td>
</tr>
<tr>
<td>March 6-8, 2007</td>
<td>Connecting w/the Learner Workshops</td>
<td>Diverse Perspectives</td>
<td>Live/3 sites/18 teachers</td>
<td>1 credit</td>
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<tr>
<td>June 18-29, 2007</td>
<td>Statistics and Probability Institute</td>
<td>MCF &amp; National Standards/Diverse Perspectives/Applications of Math</td>
<td>Live at MTU/18 teachers</td>
<td>2 weeks=4 credits</td>
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<tr>
<td>October/November 2007</td>
<td>Lesson Study Workshops</td>
<td>Collaborative Leadership</td>
<td>Live/3 sites/3 times/18 teachers</td>
<td>1 credit</td>
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<tr>
<td>June 16-27, 2008</td>
<td>Exploring Statistics through Engineering Applications Institute</td>
<td>Deepen Content Knowledge/Applications of Math/Technology Integration</td>
<td>Live at MTU/18 teachers</td>
<td>2 weeks=4 credits</td>
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<table>
<thead>
<tr>
<th>Optional Courses</th>
<th>Activity</th>
<th>Objectives</th>
<th>How/Where/#Teachers</th>
<th>Time Credits</th>
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<tr>
<td>June 17-23, 2007</td>
<td>Isle Royale Biometrics</td>
<td>Deepen Content Knowledge/Applications of Math</td>
<td>Live at MTU/Isle Royale/8 teachers</td>
<td>1 week=3 credits</td>
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<tr>
<td>July 2007</td>
<td>Engineering for Earth Science Education</td>
<td>Applications of Math</td>
<td>Live at MTU/8 teachers</td>
<td>1 week=2 credits</td>
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<tr>
<td>Spring Semester 2008</td>
<td>Learning Materials, Inquiry, and Assessment Course</td>
<td>MCF &amp; National Standards/Collaborative Leadership/Technology Integration</td>
<td>Online/MTU/8 teachers</td>
<td>2 credits</td>
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