

Breakout Sessions: Friday 1:30 - 2:30

Mt. Echo (Room 130)

Presenter: Sue Geller, Texas A&M University

Title: *A Professional Master's Degree in Mathematics for People Who Want to Teach*

Abstract: Starting in 1994 at Texas A&M University we have offered an MS degree in mathematics with an option for people who want to teach mathematics at the secondary or post-secondary levels. This is a true MS in mathematics and not an education or MAT type of degree. At the plenary presentation I will discuss how to set up such a degree, some of the benefits and pitfalls, and a basic structure. At this breakout section I will answer questions and discuss whatever aspects of the program the audience wishes to explore. These include, but are not limited to, courses written for the program, how said courses serve more than just this option, advising, where our graduates work, and other benefits and pitfalls.

Mt. Storm (Room 140)

Presenter: Harvey Keynes, University of Minnesota

Title: *The University of Minnesota Math/Math Ed Masters- Successes and Issues*

Abstract: We discuss the history and structure of the 6 year old Masters in Math/Math Ed in the School of Mathematics, University of Minnesota Math/Math Ed. We will indicate what has worked well, as well as issues that have developed over this period. Some details about the program will also be presented.

Breakout G (Room 137)

Presenter: David Manderscheid, University of Iowa

Title: *The Iowa MS Program*

Abstract: In this session I will provide details of the University of Iowa Mathematics Department MS program for students planning on teaching mathematics at the secondary level. The program places an emphasis on mathematics but is coordinated with our College of Education and has an education coursework requirement. I will also provide details on some of the challenges we face and our plans to meet these challenges. Finally, as time and interest dictate, I will also discuss some of the recent innovations in our graduate program such as peer mentors in graduate courses. These innovations have helped us greatly increase the percentage of underrepresented groups in our graduate program and should also help us attract more students to our MS teaching program. I will provide ample opportunity for discussion and questions.

Breakout Sessions: Friday 1:30 - 2:30 (contd.)

Breakout H (Room 139)

Presenters: Catherine Murphy, Purdue University Calumet

Title: *Master's of Arts in Teaching at Purdue University Calumet*

Abstract: The department of Mathematics, Computer Science, and Statistics at Purdue University Calumet offers a Master's of Arts in Teaching degree designed for middle school and high school mathematics teachers interested in further study of mathematics with deepening understanding of learning theories and instructional design specific to mathematics education. This program was dormant for several years and we have recently re-conceptualized the nature of the courses based on the interests of local teachers. Rather than having general education courses and pure or applied mathematics courses, our revised program has a set of four core courses in education specifically related to mathematics education (learning theories in mathematics education, seminar in mathematics education, instructional design in mathematics education, secondary methods in mathematics), four core courses in foundations of mathematics education (foundations of algebraic reasoning, foundations of probabilistic and statistical reasoning, foundations of the mathematics of change, foundations of geometric reasoning), and three courses in further study of graduate level mathematics. In this break-out session we will describe the history of program, salient and unique features of our current program, recruitment of students, and the implications of this new program on other master degree programs offered at Purdue University Calumet. We will also allow ample time for discussion and question

Breakout Sessions: Friday 3:00-4:00

Mt. Echo (Room 130)

Presenter: Steve Benson, EDC and University of New Hampshire

Title: *MST@UNH: A Mathematics Degree for Mathematics Teachers*

Abstract: The Master of Science for Teachers program at the University of New Hampshire was born as an NSF Summer Institute in the 1960's and has maintained its summer flavor through the years. MST is an intense 3 summer residential program which attracts students from all over the country and world. The bulk of the coursework comes from the core areas of geometry, algebra, and analysis, but we also offer electives in a variety of mathematics and education topics (e.g. Number Theory, Technology, Assessment, Topology). One of the aspects of the program of which we are most proud (and sets us apart from many other programs) is our Concluding Experience: requiring the compilation of a mathematical portfolio and completion of a comprehensive problem set during the final summer of the program. We have found this to be a more authentic and satisfying assessment and capstone than the traditional comprehensive examinations of the past. I will share details of the program, with a focus on the problem set and portfolio, as well as future plans and ideas.

312 Braunstein Hall

Presenter: Kevin Jones, Southwest Texas State University

Title: *The Texas State Middle School Mathematics Project, TxMSMP*

Abstract: The Texas State Middle School Mathematics Project, TxMSMP, is an NSF Teacher Enhancement funded collaborative effort among Southwest Texas State University, one of the leading certification institutions in Texas, Sam Houston State University, Stephen F. Austin State University and K-12 partner schools. It is designed to significantly improve mathematics education in the critical 4-8 grades in urban and rural schools across Texas by offering a graduate leadership program in middle school mathematics. The goal of TxMSMP is to create and to sustain a pool of 100 state leaders in middle school (4-8) mathematics who will act as change agents and mentors to new teachers ensuring that the current and future recommended changes from NCTM and from the Texas Education Agency are implemented in the mathematics classrooms of urban and rural schools in Texas. The project involves the development and delivery of a 36-hour graduate credit residential/distance program in mathematics and mentoring/leadership which meets the state standards for Master Mathematics Teacher. After a short presentation, Kevin Jones will help direct group discussion on Master's programs designed for teaching.

Breakout Sessions: Friday 3:00-4:00(contd)

Mt. Storm (Room 140)

Presenter: Lester Rubenfeld, Rensselaer Polytechnic Institute

Title: *A Three Summer Masters in Natural Science Program for Secondary School Mathematics and Science Teachers*

Abstract: For seven years now Rensselaer has been offering a unique three summer, six weeks/summer, masters program for mathematics and science teachers. The program stresses three themes: (i) the processes of mathematics and science; (ii) the integration of computer and other technologies into curriculum; and (iii) the deepening of content and concept knowledge. The program consists of nine courses, three each summer carrying a total of ten credits, with six of them being core courses that all participants take together. These core courses lead in a natural manner, to interdisciplinary thinking on the part of the participants, and to interdisciplinary projects in the technology courses. The remaining three courses are in the discipline areas that participants teach. The main groups of secondary school teachers presently in the program are mathematics and biology teachers, with occasionally several physics, chemistry or technology education teachers requesting admission.

To date the program has attracted teachers from about thirty states and two foreign countries. The program is very intense and the academic culture of the Rensselaer community is often very different than of the undergraduate schools attended in the past by the participants. This leads to an almost total immersion in studying and interaction on the part of the participants, which has the added (positive) effect of forming lifelong professional and personal friendships between teachers from different parts of the country.

Breakout G (Room 137)

Presenter: David Minda and Steve Pelikan, University of Cincinnati

Title: *Master of Arts for Teachers of Mathematics (MAT degree) - the Cincinnati Experience*

Abstract: The Department of Mathematical Sciences of the University of Cincinnati has offered a Master of Arts for Teachers of Mathematics (MAT degree) for nearly a quarter of a century. This program for high school teachers runs during the summer and currently has an enrollment of 35-40 students.

Now many states strongly encourage teachers to obtain a graduate degree relatively soon after receiving certification, so it is an excellent time to begin a such a program. We will offer advice to those who would like to initiate a Professional Master's Degree in Teaching Mathematics. Learn from our past mistakes and current successes. Issues to be discussed include: designing a program (appropriate courses, desired balance between content and methods classes, and target audience), reaching the target audience, involving faculty, building a community among the students in the program, and costs and benefits for graduate program.

Specific details about the MAT program at the University of Cincinnati will be available from faculty and MAT graduates in various breakout sessions.

Breakout Sessions: Saturday 1:30-2:30

Discussions with Teachers: High school teachers who have graduated from the University of Cincinnati MAT program will discuss their experiences. Room locations will be announced.

Alecia Fryman, Milan High School, Indiana
PeAlgebra, Algebra I, Geometry, and Advanced Geometry

Steve Phelps, Maderia Junior-Senior School, Ohio
Geometry

Lee Strassell, Madison Consolidated High School, Indiana
Discrete Math, AP Calculus, Geometry, and Honors Geometry

Linda Van Groll, Chillicothe High School, Ohio
Physics and Mathematics

Mike Ward, Moeller, High School, Ohio
Statistics

Jeff Willets, Beaver creek High School, Ohio
Pre-Calculus, Geometry, and Pre-Algebra (inclusion)

Breakout Sessions: Saturday 2:45-3:45

Mt. Lookout (Room 136)

Presenter: Carol Langbort, San Francisco State University

Title: *Developing Leadership in Mathematics Education through a Masters Degree Program*

Abstract: A Request for Proposals for a planning grant in 1993 from the Dwight D. Eisenhower Mathematics and Science Education State Grant Program provided the impetus for designing a Masters Degree program in Education with a Concentration in Mathematics Education for K-8 teachers. There are three goals of the program: to increase the mathematical knowledge of the teachers; to increase the teachers' knowledge of current issues in mathematics education; and to develop teacher leaders in mathematics education. The third cohort of students will graduate in the Spring of 2002. In this presentation, I would like to share some of our experiences with this program, including the development and implementation of this interdepartmental program, the descriptions of courses developed for this program, with special emphasis on the course, Leadership Development in Mathematics Education. Student's work will be shared.

Mt. Storm (Room 140)

Presenter: Diane Resek, San Francisco State

Title: *A Mathematics Program for Middle School Teachers*

Abstract:

The Mathematics Department at San Francisco State University has developed a sequence of three courses (10 units) to prepare teachers with an elementary school credential to teach middle school. The first course works with algebra and geometry; the second with algebra and probability; and the third with algebra, geometry, and probability.

The essential features of the courses and the implementation of the program will be discussed in the workshop. Then participants will engage in activities from the classes to see the level of the course material and the nature of the mathematical understanding that the program promotes.

Mt. Echo (Room 130)

Presenter: David Stone and Ros Welchman, Brooklyn College

Title: *Two Masters Programs at Brooklyn College for Elementary and Middle School Teachers*

Abstract: This session highlights features of mathematics courses in two Masters programs in Mathematics Education at Brooklyn College, one for elementary school teachers and the other for middle school teachers. Mathematics courses focus on number theory and algebra, geometry, probability/statistics, discrete mathematics, history of mathematics, and functions. Features include: implicit use of exemplary pedagogy (e.g. techniques for developing concepts and proofs; learning centers; cooperative groupwork); use of technology to enhance mathematics learning; use of physical models and other representations of mathematical ideas; portfolio assessment; connections of content to standards-based school curriculum materials and to NCTM materials (e.g., Standards; Addenda series, TCM and MTMS journal articles); and connection of content to action research projects of prior masters program students. Examples of approaches and materials from Algebra and Geometry courses for K-8 teachers will be provided.

The session will also discuss collaborations among faculty in education and mathematics that contributed to the development and implementation of the courses. Strategies to foster this collaboration include: team-teaching; development and tryout of materials/approaches by education faculty in a pilot course and subsequent use by mathematics faculty; use of federal and state funding; and involvement of master teachers who have experience with innovative programs in their schools.