

Schedule and Abstracts for Breakout Sessions

AMS-MER Workshop on
Excellence in Undergraduate Mathematics:
Lessons Across the Curriculum
Sept. 11 - 14, 2003, University of Alaska, Anchorage, AK

Breakout Sessions: Friday 1:30 - 2:30

Room: Canary, Commons

Presenters: Herbert Schroeder, University of Alaska, Anchorage

Title: *The Alaska Native Science and Engineering Program (ANSEP)*

Abstract: ANSEP is a comprehensive suite of outreach, recruitment, retention and placement strategies designed to help students fulfill their potential in college, sustain their interest in science, technology, engineering, and mathematics, and develop an interest in graduate study. This program represents a new paradigm for engineering and science education wherein students are actively engaged with professional scientists and engineers from high school through graduate school. Student success stories and details about implementation of this program at UAA will be discussed.

Room: 2nd floor lounge, East Dormitory

Presenters: Teri J. Murphy and Susan E. Walden, University of Oklahoma

Title: *Department Culture Affects Recruitment and Retention of Majors*

Abstract: We have been studying a department that has successfully achieved unusual diversity among its undergraduate majors. This department, Industrial Engineering at the University of Oklahoma, has accomplished this without a large infusion of money targeted for that purpose. Rather, a core of the faculty considers the undergraduate program to be one of the most important departmental activities and students respond to their efforts. According to the research literature, all undergraduates benefit from such attention, but female and minority students respond disproportionately well. At this breakout session, the presenters will describe some features of the department culture that students find so attractive and lead a discussion about how these features can be incorporated into mathematics departments.

Room: 107, Commons

Presenters: Harvey Keynes, University of Minnesota

Title: *Evaluation- "for love or money"*

Abstract: Evaluations can serve many different audiences and purposes. Some data that might convince a department head or dean that a program is intellectually solid may not convince a great many students to take the course. And neither type of solid assessments for the above audiences might be useful in getting external funding for the program. In this session, we will discuss different types of approaches and evaluations that have been successfully used for different audiences. We will look at some of the features that appear to be common to all good evaluations, and other features which work well in some specific types of evaluations. We hope to discuss several models that workshop participants are using in their own programs.

Room: 3rd floor lounge, East dormitory

Presenters: Peter R. Turner, Clarkson University

Title: *Transition Support For First Year Students*

Abstract: The issue of outreach is particularly important to us at Clarkson. We are located in a particularly economically deprived area of northern New York State which includes a school district with a majority American Indian population. Clarkson is a small, predominantly technical, university in which women are significantly under-represented. The University has recently established an Office of Educational Outreach which demonstrates the institutional commitment to extending our appeal beyond the currently dominant constituencies of white male engineering and business students.

At a department level, we have initiated a substantial program of transition support for first year students facing difficulties in their mathematics courses. The formal assessment of these programs is in its early stages, but is encouraging so far. Components of this transition support include a diagnostic test in May prior to enrolling, individual advice on pre-first year summer preparation, formal and web-based refresher summer courses, ABCs (Absolute Basic Competencies) testing during both Calculus I and II, and special Co-Calculus courses for students that need additional help with basics. The session would begin with a brief description of the whole package and indications on its outcomes. The intention is that the presentation would generate discussion of different approaches to this topic of growing importance.

Room: 4th floor lounge, East dormitory

Presenters: Kenneth C Millett, University of California, Santa Barbara

Title: *The University of California at Santa Barbara's CTFMS program*

Abstract: The University of California at Santa Barbara's *The South Coast Community Teaching Fellowship in Mathematics and Science* (CTFMS) program is a collaboration of four community colleges, a liberal arts college and UCSB in the recruitment, training and support of roughly 150 undergraduate students (CTFMS Fellows) interested in becoming secondary school mathematics or science teachers. The core strategies are: (1) Recruit, train, and support successful mathematics and science students in teaching internships to explore secondary teaching careers, (2) Encourage Fellows to become role models for secondary students, especially those from underrepresented groups, promoting college preparation in mathematics and science and, (3) Stimulate professional collaborations among secondary teachers, college and university students and faculty members. The breakout session will look closely at several successful elements of the program, identify some difficult challenges and describe the experience we have in attempting to address them.

Breakout Sessions: Friday 3:00 - 4:00

Department Team Meetings Departments teams will meet together with other departments. Please fill free to switch if you feel your team will benefit more in a different group.

Room: Canary, Commones

Group I

Arizona State University
Colorado School of Mines
University of Arkansas at Little Rock

University of Georgia
University of Maryland Eastern Shore
University of Southern Mississippi

Room: 2nd floor lounge, East dormitory

Group II

Appalachian State University
Bowie State University
California State University Stanislaus
Clarkson University

Northern Kentucky University
University of Alaska Southeast
University of La Verne
University of Alaska Anchorage

Room: 3rd floor lounge, East dormitory

Group III

Brevard Community College
Lincoln Land Community College
Los Angeles Valley College
Minnesota State Community and Technical College-Fergus Falls

Room: 4th floor lounge, East dormitory

Group IV

Columbia College
Connecticut College
Hood College

Ithaca College
Loras College
Moravian College

Breakout Sessions: Saturday 1:00 - 2:00

Room: 107, Commons

Presenters: Dennis Davenport, Miami University of Ohio

Title: *What Makes a Good Proposal?*

Abstract: In this session we give helpful hints to writing grant proposals. We will also include a mock panel review session where copies of National Science Foundation submitted proposals are to be used as the test subject. The first twenty minutes will be a presentation on proposal writing and funding opportunities, and the remaining time will be spent doing the mock review.

Room: 2nd floor lounge, East dormitory

Presenters: William Haver, Virginia Commonwealth University

Title: *Curriculum Renewal Across the First Two Years, the CUPM Curriculum Guide.*

Abstract: The Mathematical Association of America's Committee on the Undergraduate Program in Mathematics (CUPM) is charged with making recommendations to guide mathematics departments in designing curricula for their undergraduate students. Beginning in 1953 CUPM has issued reports approximately every dozen years. Based upon the input from more than 500 mathematicians participating in FOCUS groups, a set of position papers prepared for CUPM by prominent mathematicians, and reports from representatives of 15 different partner disciplines resulting from workshops organized by CUPM's subcommittee on Curriculum Renewal Across the First Two Years, the CUPM Curriculum Guide will be formally released at the January 2003 joint meetings.

Part I of the report consists of a set of six overriding recommendations concerning all courses and programs offered by a mathematical sciences department: Understand the student population and the extent to which courses and programs meet the needs of these students; Develop mathematical thinking and communication skills in all courses; Communicate the breadth and interconnections of the mathematical sciences in all courses; Promote interdisciplinary collaboration; Use computer technology as a tool for solving problems and to promote understanding of mathematical ideas; Provide faculty support for curricular and instructional improvement.

Part II discusses in detail the implications of these recommendations for various components of the undergraduate program. For example, departments are urged to seriously consider whether a computation based college algebra course meets the needs of any of their students. It is recommended that each department offer at least one joint major with another discipline, taking into account the strengths of its institution. Part III consists of a large number of Illustrative Examples with links to more information concerning programs that have implemented various recommendations.

In this breakout session, the major components of the CUPM Guidelines will be introduced and participants will engage in a discussion concerning how the Guidelines can effectively be used as a tool to help a department look at all aspects of its program.

Room: 3rd floor lounge, East dormitory

Presenters: Eric Kostelich, Arizona State University

Title: *Curriculum innovation at the advanced undergraduate level: New programs and courses to attract good students and (we hope) make friends in high places*

Abstract: The number of mathematically talented students attending four-year colleges and universities is as large as ever. But the vast majority elect to study subjects other than mathematics. This workshop will describe our department's efforts to develop innovative undergraduate curricula to attract more minors and double-majors, as well to cultivate allies among other science and engineering departments and deans' offices.

Room: 4th floor lounge, East dormitory

Presenters: John Khoury and Shai Neumann, Brevard Community College

Title: *Just like the marines: We are looking for a few good men or women.*

Abstract: At our community college, the most under represented group of students is the group of “good” math students. Even among the sub-population of students taking the engineering track, real interest in mathematics is hard to find. Since the “good” math students did not seek us, a group of Math Department faculty decided to seek “them.”

In this breakout session, Brevard Community College math faculty will share their three year experience in attracting top math students to a special summer program. Industry contacts, assessment methodology and expansion plans for year round programs will be presented.

Room: Canary, Commons

Presenters: Marty Strenstein and Osman Yurekli, Ithaca College

Title: *Equal access to math education for all: a case study of two Ithaca College programs.*

Abstract: Frederick Douglass Academy (FDA) partnership In April, 1998, Ithaca College, a private comprehensive college in upstate New York, and Frederick Douglass Academy, a public middle/high school in the heart of New York City’s Harlem formed a partnership to enrich the lives of students and faculty from both institutions. With regards to mathematics education, this has involved our faculty and math/ed majors presenting workshops at FDA two to three times a year on a variety of topics. Some workshops run by our faculty have been strictly professional development on topics of special interest to the high school faculty. Other presentations, given by our students, have resulted in allowing the college students an inner city teaching experience, and giving the high school students not only an exciting, challenging break from their daily schedules but also an opportunity to talk with college students who are enthusiastic about mathematics.

TEAM (Technology, Empowerment, and Modeling) Program With funding from a 3M Vision Grant, we hosted summer programs on the Ithaca College campus aimed at improving analytical reasoning skills for traditionally underrepresented students entering their senior year of high school and considering careers in mathematics or computer science. The almost 50 students from across the country who participated in TEAM over the past three years received an experience which we’re confident they will never forget. We increased their interest in and access to high level mathematics programs such as AP Calculus, and we challenged, encouraged, and excited them to further their formal and informal exploration of mathematics and computer science. They learned about problem solving, cooperation, and team building. Finally, there were real social implications as these students of color mixed with other students (primarily white, and middle to upper class) who were participating in other Ithaca College summer programs.