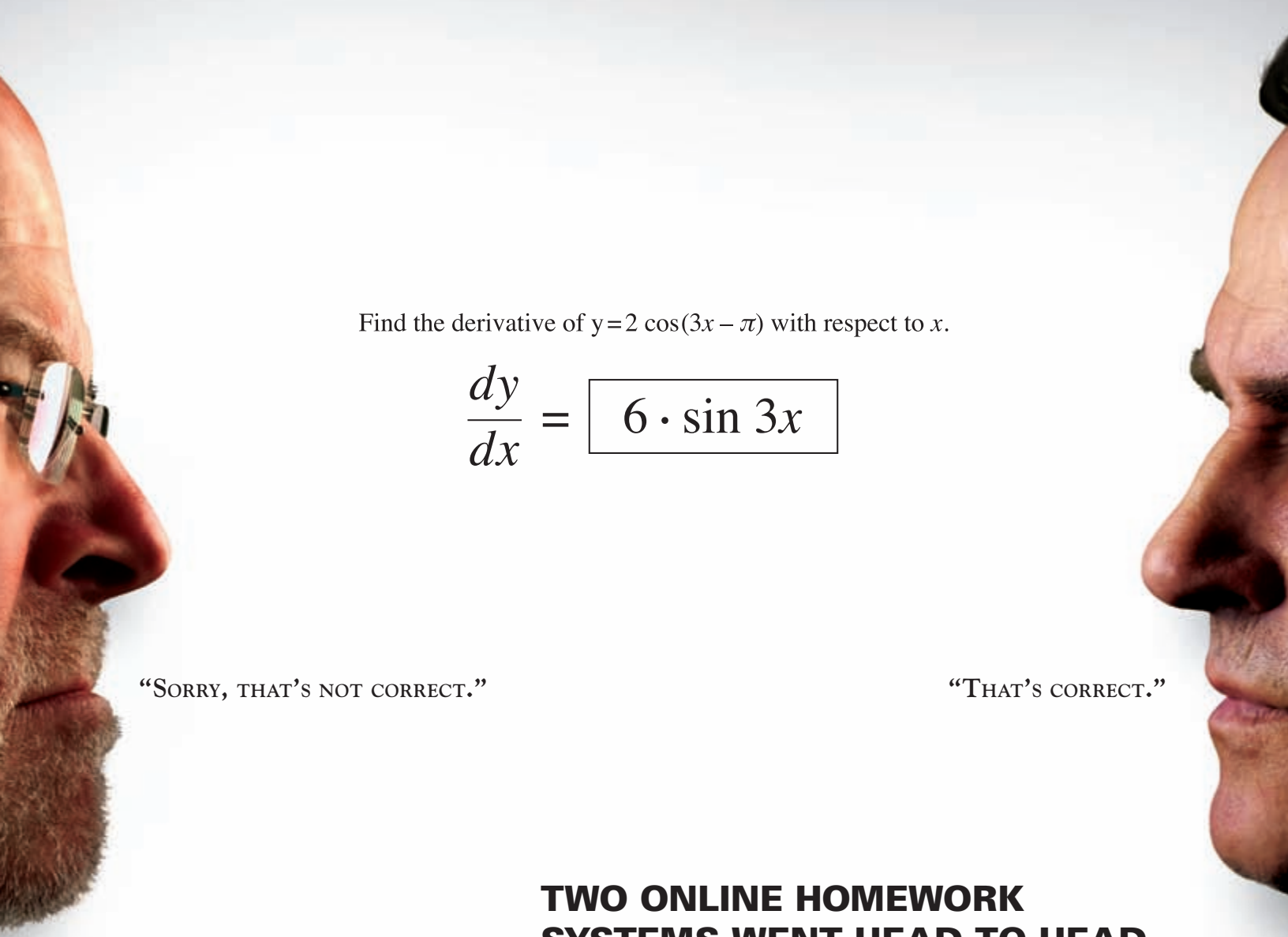
MathFest

Lexington, Kentucky | August 4–6

2011

MAA

MATHEMATICAL ASSOCIATION OF AMERICA



TWO ONLINE HOMEWORK SYSTEMS WENT HEAD TO HEAD. ONLY ONE MADE THE GRADE.

What good is an online homework system if it can't recognize right from wrong? Our sentiments exactly. Which is why we decided to compare WebAssign with the other leading homework system for math. The results were surprising. The other system failed to recognize correct answers to free response questions time and time again. That means students who were actually answering correctly were receiving failing grades. WebAssign, on the other hand, was designed to recognize and accept more iterations of a correct answer. In other words, WebAssign grades a lot more like a living, breathing professor and a lot less like, well, that other system.

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MathFest

Lexington, Kentucky | August 4–6 2011

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MAA MathFest 2011

Join Maplesoft™ at MAA MathFest 2011 and revolutionize your testing, assessment and placement testing!

A New Generation of Placement Testing

Presented by Louise Krmpotic, Director, Business Development, Maplesoft

Friday, August 5 • 1:00pm to 2:30pm
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Louise Krmpotic earned her Bachelor of Mathematics and Masters of Mathematics from the University of Waterloo in Canada. She also holds a Bachelor of Education from Althouse College, the Faculty of Education at the University of Western Ontario in London, Ontario. At Maplesoft, Mrs. Krmpotic has been responsible for several key initiatives, from product development to training and content development. She currently oversees key relationships with higher-educational publishers and is responsible for finding and developing new business opportunities.

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Invited Addresses

Earle Raymond Hedrick Lecture Series

Manjul Bhargava, *Princeton University*

The World of Algebraic Curves (and the Special Role That Elliptic Curves Play)

Lecture 1

Thursday, August 4, 10:30 a.m. Ð 11:20 a.m.

From Right-Angled Triangles to Algebraic Curves

à e classical and ancient problem of finding right-angled triangles with integer side lengths has a natural and beautiful solution in terms of the geometry of conics. In this lecture, we describe this method and how it can be adapted to find all rational points—i.e., points having rational coordinates—on any conic (ellipse, parabola, or hyperbola) in the plane.

à e method immediately leads to questions about curves in the plane of higher degree and, in particular, to elliptic curves.

Lecture 2

Friday, August 5, 9:30 a.m. Ð 10:20 a.m.

The Special Role of Elliptic Curves

Unlike conics, which are curves in the plane defined by equations of degree two, elliptic curves are defined by equations of degree three. à is slight change already makes elliptic curves very different from conics, and it also turns out that the behavior of elliptic curves is drastically different than that of curves of degree four and higher.

What really sets elliptic curves apart is that the set of rational points on an elliptic curve has a natural group structure. In this lecture, we describe this group structure and explain how it can be used to answer many questions about elliptic curves (and other objects) that would be difficult to answer otherwise. We also describe many open questions, as well as some recent progress on their answers.

Lecture 3

Saturday, August 6, 9:30 a.m. Ð 10:20 a.m.

How Many Points Are Needed, on Average, to Generate All Rational Points on an Elliptic Curve?

A rational elliptic curve may be viewed as the set of solutions to an equation of the form $y^2 = x^3 + Ax + B$, where A and B are rational numbers. à e set of rational points on this curve possesses a natural abelian group structure, and the Mordell-Weil theorem states that this group is always finitely generated. à e *rank* of a rational elliptic curve measures *how many* rational points are needed to generate all the rational points on the curve.

à ere is a standard conjecture—originating in work of Goldfeld and Katz-Sarnak—that states that the *average* rank of all elliptic curves should be 1/2; however, it has not previously been known that the average rank is even finite! In this lecture, we describe recent work that shows that the average rank is finite; in fact, we show that the average rank is less than 1! It follows that many—indeed, we show at least 10 percent of—elliptic curves have no rational points.

à is is joint work with Arul Shankar.

AMS-MAA Joint Invited Address

Thursday, August 4, 8:30 a.m. Ð 9:20 a.m.

Laura DeMarco, *University of Illinois, Chicago*

Polynomial Dynamics: Conjugacy and Combinatorics

In the study of any collection of dynamical systems, one of the main goals is a classification of possibilities. Ideally, for each equivalence class of systems, we can find a simple model that captures all of the important long-term information about the system.

In this talk, I will introduce this problem of classification in the setting of complex one-dimensional polynomials. I will describe some of the combinatorial tools that have been used to address this problem, with the aim of presenting recent work (joint with Kevin Pilgrim) about the conjugacy classes and the geometry of the moduli space of polynomials.

Invited Addresses (continued)

MAA Invited Address

Thursday, August 4, 9:30 a.m. Ð 10:20 a.m.

Edward Burger, *Williams College*

Planting Your Roots in the Natural Numbers: A Rational and Irrational Look at 1, 2, 3, 4, ...

Some people see magical features in the famous Fibonacci numbers and the alluring golden ratio *phi*. But what if you replace the phamous phi with your phavorite obscure quadratic irrational real number? Is the magic still there? Here in 1 hour, 2 examples, 3 theorems, and 4 acts we'll consider these questions, highlight their history, and share some recent insights that will transÿgure the magic into mathematics. Revealing any more here would be simply ab-*surd*.

MAA Invited Address

Saturday, August 6, 8:30 a.m. Ð 9:20 a.m.

Lauren Ancel Meyers, *University of Texas, Austin*

Mathematical Approaches to Infectious Disease Prediction and Control

Mathematics has long been an important tool for understanding and controlling the spread of infectious diseases. I will present an overview of compartmental models, the traditional approach to modeling infectious°disease dynamics, and then introduce contact network epidemiology, a relatively new approach that applies bond percolation on random graphs to model the spread of infectious disease through heterogeneous populations.

As I will illustrate, these methods can be used to address public health challenges and have recently been coupled with powerful computational methods to optimize epidemic control strategies.

MAA Invited Address

Saturday, August 6, 10:30 a.m. Ð 11:20 a.m.

Annalisa Crannell, *Franklin & Marshall College*

In the Shadow of Desargues

¸ ose of us who teach projective geometry o″ en nod to perspective art as the spark from which projective geometry caught ÿre and grew. ¸ is talk looks directly at projective geometry as a tool to illuminate the workings of perspective artists. We will particularly shine the light on Desargues's triangle theorem (which says that any pair of triangles that is perspective from a point is perspective from a line), together with an even simpler theorem (you have to see it to believe it!). Given any convoluted, complicated polygonal object, these theorems allow us to draw that object together with something that is related to it—its shadow, re˙ ection, or other rigid symmetries—and we'll show how this works. If you enjoy doodling or sketching, bring your pencil, a good eraser, and a straightedge.

AWM-MAA Etta Z. Falconer Lecture

Friday, August 5, 8:30 a.m. Ð 9:20 a.m.

Dawn Lott, *Delaware State University*

Mathematical Interventions for Aneurysm Treatment

Aneurysm is a vascular disease characterized by a weak or thin spot on a blood vessel that balloons out and ÿlls with blood. Cerebral aneurysm can occur anywhere in the brain, but most are located along a loop of arteries that run between the underside of the brain and the base of the skull (Circle of Willis). Cerebral aneurysms are particularly dangerous because of their di^ culty to treat and their high mortality and morbidity rate. ¸ ere are several risk factors for cerebral aneurysm, among which are hypertension, heavy alcohol consumption, and cigarette smoking. Rupture of cerebral aneurysm (subarachnoid hemorrhage) can cause stroke.°Understanding the mathematical relationships

Invited Addresses (continued)

and the hemodynamic factors predisposing aneurysms to further growth and rupture will enable neurosurgeons to determine which aneurysms have a high likelihood of rupture and thus should be treated. In addition, such knowledge may also help predict which aneurysms will never rupture.

In making such predictions, only patients with a risk of aneurysmal rupture would be exposed to the risk of surgery. à is talk will discuss mathematical and biomechanical interventions for aneurysm treatment and will address societal effects of this vascular disease.

James R. Leitzel Lecture

Friday, August 5, 10:30 a.m. Đ 11:20 a.m.

Philip Kutzko, *University of Iowa*

Just Walk Away, RenŽ: Cultural Issues in Broadening Participation in Mathematics

Science, as we know it today, developed in a particular time and place for reasons that have never fully been explained. à e concept of a function—a concept that underlies all of modern science—first appears in Descartes's *La Géometrie* in 1637; within a generation, Newton and Leibniz had developed the calculus and Newton had laid the foundation for modern physics. Similar transformative advances occurred shortly thereafter in chemistry, biology, and medicine. à is is the context in which we do science today; a West European, Cartesian context in an increasingly non-European nation.

à e Western approach to science embodies certain cultural values, among them skepticism, objectivity, secularism, and a belief in progress as an unmixed virtue. à ese values are by no means universally accepted, either internationally or within our own country. Further, they have sometimes been used to justify aggression and sometimes worse by Europeans and their descendants in the Americas against other ethnic groups and even against groups within European society. à is, it would seem, is reason enough for underrepresented minority groups and other Americans who have not historically been invited to the table to steer clear of European science.

Any approach toward broadening participation in science that fails to take into account this cultural context can go only so far. Examples are afforded by standardized testing and affirmative action, each of which is ultimately motivated by the same goal: to remove impediments to access caused by overt ethnic and class discrimination (standardized tests) and by the consequences of such discrimination (affirmative action).

Both have been valuable in extending access to ethnic and national groups who have found Western science culturally appealing as well as to individuals with similar proclivities from underrepresented groups; indeed, the use of standardized testing transformed the populations doing science during the *Sputnik* era while affirmative action has been responsible for similar transformations in more recent times. However, these and other strategies that have focused largely on removing barriers to inclusion may be nearing the limit of their utility.

One of the distinctive features of Iowa's math department's initiative to broaden participation in our graduate program is the awareness we have developed of the cultural context in which our effort takes place. I will discuss this cultural context in my talk and argue that an understanding of this context can lead to new strategies, strategies that, in our case, have transformed a traditional mathematics department in an ethnically homogeneous state into what some have called a model for what an American math department should look like in the 21st century.

Pi Mu Epsilon J. Sutherland Frame Lecture

Friday, August 5, 8:00 p.m. Đ 8:50 p.m.

Margaret Wright, *Courant Institute of Mathematical Sciences*

You CanÕtTop This: Making Things Better with Mathematics

Many problems in science, engineering, medicine, and life involve choosing the best way (or at least a better way) to do something. Mathematical optimization can often provide the answers we want; the speaker will describe when, why, and how this happens, along with a few examples.

Invited Addresses (continued)

NAM David Blackwell Lecture

Friday, August 5, 1:00 p.m. Ð 1:50 p.m.

Farrah Jackson Chandler, *Elizabeth City State University*

Using e-Mentoring to Prepare the Next Generation of Mathematics Teachers

It has been well documented that the mathematics and science scores of U.S. students are lagging behind those of their international peers. A study conducted by the National Commission on Mathematics and Science Teaching for the 21st century suggests that providing more training and professional development opportunities for teachers is the clearest way to increase the achievement level of students in both mathematics and science. In this talk, I will present an overview of work that I have been involved in to prepare and train mathematics teachers through e-mentoring.

MAA Lecture for Students

Thursday, August 4, 1:00 p.m. Ð 1:50 p.m.

Roger Nelsen, *Lewis & Clark College*

Math Icons

An icon (from the Greek for "image") is defined as a picture that is universally recognized to be representative of something. à e world is full of distinctive icons. Flags and shields represent countries, graphic designs represent commercial enterprises, and computer icons are essential tools for working with a variety of electronic devices from desktop computers to cell phones.

What are the icons of mathematics? Numerals? Symbols? Equations? After many years of working with visual proofs, I believe that certain geometric diagrams play a crucial role in visualizing mathematical proofs. In this talk I'll present several of these diagrams, which I call *math icons*, and explore the mathematics that lies within, and that can be created with them.

An invitation to explore …http://mathcircles.org

National Association of Math Circles (NAMC)

Providing resources to create new Math Circles, maintaining a directory of programs, and supporting the development of the Math Circle community.

What is a Math Circle?

Mathematicians and mathematical scientists meet with pre-college students (and sometimes their teachers) in informal settings to work on interesting problems and topics in mathematics. These interactions excite students about mathematics and provide them with a community to foster their passion for mathematical thinking.

The Math Circles Experience

Math Circles emphasize bringing together professional mathematicians and secondary school students on a regular basis for problem solving and mathematical exploration.

The NAMC Website (http://mathcircles.org) includes Circle in a Box wiki, Lesson Plans and videos of sample circle sessions, contact information for existing Math Circles, the Math Circle Problem Collection, and a forum for NAMC members to discuss Math Circles. The NAMC site links to the *Circle in a Box* book and *Within the Circle* DVD.

MSRI National Association of MATH CIRCLES

The annual **NAMC CIRCLE ON THE ROAD WORKSHOP** combines a Math Festival with many sample circle sessions. The workshop serves as an introduction to instructional techniques for circle leaders and a laboratory for circle evaluators.

This workshop gives those wishing to start Math Circles a hands-on introduction to activities and the benefit of the advice of experienced circle leaders. If you are unable to attend Circle on the Road you can participate with online videos and other program resources on the NAMC website.

The Akamai Foundation

Math Circle Mini Grants are available for those interested in starting a program. For more information stop by the NAMC Booth!

Mathematical Sciences Research Institute • www.msri.org • Shiing-Shen Chern Hall • 17 Gauss Way, Berkeley, CA 94720-5070

Invited Paper Sessions

For full descriptions of the Invited Paper Sessions, go to http://www.maa.org/mathfest/ips.html.

Connections to Complex Dynamics

Part 1. Thursday, August 4, 1:00 p.m. Ð 4:30 p.m.
Part 2. Friday, August 5, 1:00 p.m. Ð 4:30 p.m.

Rodrigo Perez, Indiana University–Purdue University, Indianapolis; Roland Roeder, Indiana University–Purdue University, Indianapolis

Speakers: Areceli Bonifant, Joshua Bowman, Clinton Curry, Jeâ€rey Diller, Jan-Li Lin, Phil Mummert, Rodrigo Perez, Roland Roeder, Paul Blanchard, and Bob Devaney.

Offering Students Lessons Beyond Mathematics, through Mathematics

Part 1. Thursday, August 4, 2:00 p.m. Ð 4:00 p.m.
Part 2. Friday, August 5, 2:30 p.m. Ð 4:00 p.m.

Edward Burger, Williams College

Speakers: Deborah J. Bergstrand, Christina Carter, Candice Dance, Harry Lucas Jr., Lew Ludwig, Colm Mulcahy, Michael Starbird

Polyhedra Are Everywhere!

Friday, August 5, 2:00 p.m. Ð 5:00 p.m.

Benjamin Braun, University of Kentucky

Speakers: Matthias Beck, Jeâ€rey Blanchard, Jesus De Loera, Caroline Klivans, Carl Lee, Margaret Readdy

Projective Geometry Applied to Perspective Art

Saturday, August 6, 1:00 p.m. Ð 4:00 p.m.

Annalisa Crannell, Franklin & Marshall College; Marc Frantz, Indiana University

Speakers: Marc Frantz, Tomás García-Salgado, Don Row, Talmadge James Reid, Dick Termes, Norman Wildberger

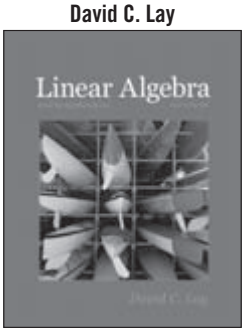
Cultural and Philosophic Underpinnings of Western Science: Implications for American Mathematics in the 21st Century

Philip Kutzko, University of Iowa

Speakers: Paulette Willis, David Manderscheid, Douglas Mupasiri, Edray Goins

New Mathematics and Statistics Titles from Authors You Trust

David C. Lay



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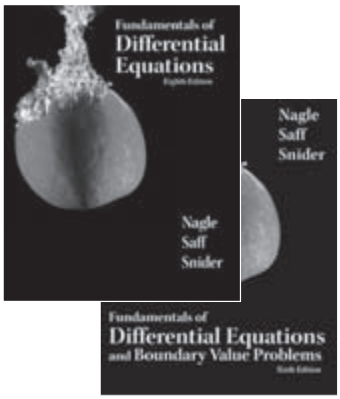

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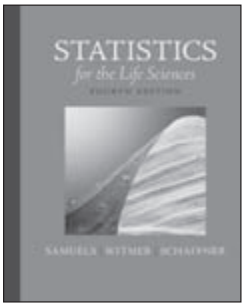

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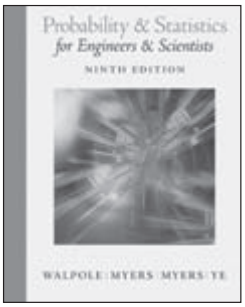

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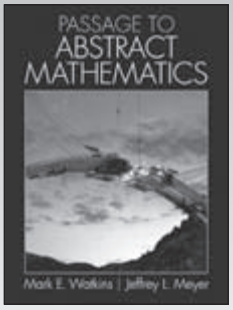
Watkins • Meyer



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Contributed Paper Sessions

Thursday, August 4, through Saturday, August 6

For full descriptions of the Contributed Paper Sessions, go to http://www.maa.org/mathfest/cps.html.

First-Year Seminar/First-Year Experience Mathematics Courses

Jon L. Johnson, Elmhurst College; Cheryl J. McAlister, Southeast Missouri State University

Thursday, August 4, 1:00 p.m. Ð 5:20 p.m., Elkhorn D

Fostering, Supporting, and Propagating Math Circles for Students and Teachers

Tatiana Shubin, San Jose State University; James Tanton, St. Mark's School

Session 1, Thursday, August 4, 8:30 a.m Ð 10:30 a.m., Elkhorn A
Session 2, Friday, August 5, 8:30 a.m Ð 10:05 a.m., Elkhorn A
Discussion Session, Friday, August 5, 10:10 a.m. Ð 10:30 a.m., Elkhorn A

Geometry-Topics That Engage Students

Sarah Mabrouk, Framingham State University

Session 1, Friday, August 5, 8:30 a.m. Ð 10:30 a.m., Elkhorn B
Session 2, Friday, August 5, 1:00 p.m. Ð 4:00 p.m., Elkhorn B

The History of Mathematics and Its Uses in the Classroom

Joel Haack, University of Northern Iowa; Pamela L. Peters, University of Wisconsin Platteville; Pam Crawford, Jacksonville University; Ximena P. Catepillan, Millersville University of Pennsylvania

Session 1, Thursday, August 4, 3:30 p.m. Ð 5:30 p.m., Elkhorn A
Session 2, Saturday, August 6, 8:30 a.m. Ð 11:30 a.m., Elkhorn A

Know More, Teach Better? Content Knowledge for Secondary Teaching and Above

Cindy Traub, Vincent Kieftenbeld, Adam Weyhaupt, Southern Illinois University, Edwardsville

Saturday, August 6, 1:00 p.m. Ð 3:40 p.m., Elkhorn B

Mathematical Modeling Projects That Matter

Mike Diehl, Endicott College; Matthew Pons, North Central College; Katharine Ott, University of Kentucky

Session 1, Thursday, August 4, 8:30 a.m. Ð 10:10 a.m., Elkhorn B
Session 2, Thursday, August 4, 1:00 p.m. Ð 4:00 p.m., Elkhorn B

Novel Ways to Incorporate Writing into Mathematics Classes

Ryan Stuffelbeam, Transylvania University; Martin Montgomery, Sam Houston State University

Session 1, Friday, August 5, 8:30 a.m. Ð 11:30 a.m., Elkhorn C
Session 2, Saturday, August 6, 8:30 a.m. Ð 11:30 a.m., Elkhorn C
Session 3, Saturday, August 6, 1:00 p.m. Ð 4:00 p.m., Elkhorn C

Quantitative Reasoning and Literacy: Pedagogical Strategies

Mike LeVan, Transylvania University

Friday, August 5, 1:00 p.m. Ð 3:20 p.m. , Elkhorn C

Recreational Mathematics: New Problems and New Solutions

Paul Coe, Dominican University; Kristen Schemmerhorn, Dominican University

Session 1, Friday, August 5, 1:00 p.m. Ð 4:40 p.m., Elkhorn D
Session 2, Saturday, August 6, 8:30 a.m. Ð 11:30 a.m., Elkhorn D

Teaching High School Mathematics: Beautiful Lessons Found on the Scenic Route

Caren Diefenderfer, Hollins University

Saturday, August 6, 1:00 p.m. Ð 3:00 p.m., Elkhorn D

Trends in Undergraduate Mathematical Biology Education

Timothy D. Comar, Benedictine University

Thursday, August 4, 1:00 p.m. Ð 2:40 p.m., Elkhorn C

What I Wish I Knew the First (or Second or É n^{th}) Time I Taught Statistics

Brian Gill, Seattle Pacific University; Nancy Boynton, SUNY Fredonia; Michael Posner, Villanova University

Friday, August 5, 1:00 p.m. Ð 3:00 p.m., Elkhorn A

General Contributed Paper Sessions

Shawnee McMurran, California State University, San Bernardino

GCPS #1: History and Philosophy, Thursday 8:30 a.m. Ð 10:15 a.m., Elkhorn C
GCPS #2: Teaching and Learning, Thursday 8:30 a.m. Ð 10:15 a.m., Elkhorn D
GCPS #3: Applied Mathematics, Thursday 8:30 a.m. Ð 10:30 a.m., Berea Room
GCPS #4: Technology and Teaching, Thursday 1:00 p.m. Ð 5:45 p.m., Berea Room
GCPS #5: Modeling and Applications, Friday 8:15 a.m. Ð 11:30 a.m., Berea Room
GCPS #6A: Assessment, Mentoring, & Outreach, Friday 1:00 p.m. Ð 3:30 p.m., Berea Room
GCPS #6B: Pure Mathematics 1, Friday, 3:30 p.m. Ð 5:00 p.m., Berea Room
GCPS #7: Pure Mathematics 2, Saturday, 8:30 a.m. Ð 10:30 a.m., Elkhorn B
GCPS #8: Teaching Introductory Mathematics, Saturday 8:30 a.m. Ð 10:00 a.m., Berea Room
GCPS #9A: Pure Mathematics 3, Saturday, 1:00 p.m. Ð 3:30 p.m., Elkhorn A
GCPS #9B: Interdisciplinary Topics, Saturday, 3:30 p.m. Ð 4:45 p.m., Elkhorn A
GCPS #10: Teaching Advanced Mathematics, Saturday 1:00 p.m. Ð 4:00 p.m., Berea Room

Panels and Other Sessions

For full descriptions of Panels and Other Sessions, go to http://www.maa.org/mathfest/panels.html

Teaching Mathematics with the New Tablets: iPads, Slates, and Smartphones
Thursday, August 4, 1:00 p.m. Ð 2:20 p.m.
Lila Roberts, Clayton State University

Assessing Mathematics Courses for Students in Business, Education, Engineering, and Nursing
Thursday, August 4, 1:00 p.m. Ð 2:20 p.m.
Bonnie Gold, Monmouth University; William Martin, North Dakota State University

Assessing Quantitative Literacy
Thursday, August 4, 2:35 p.m. Ð 3:55 p.m.
Aaron Montgomery, Central Washington University

Issues for Early-Career Mathematicians in Academia
Thursday, August 4, 4:10 p.m. Ð 5:30 p.m.
Doug Ensley, Shippensburg University

Undergraduate MathBio Programs Funded by NSF-UBM
Thursday, August 4, 4:10 p.m. Ð 5:30 p.m.
Maeve McCarthy, Murray State University

The Future of the Mathematics Major for Pre-Service Teachers
Thursday, August 4, 2:35 p.m. Ð 3:55 p.m.
Martha J. Siegel, Towson University; Kenneth C. Millett, University of California, Santa Barbara

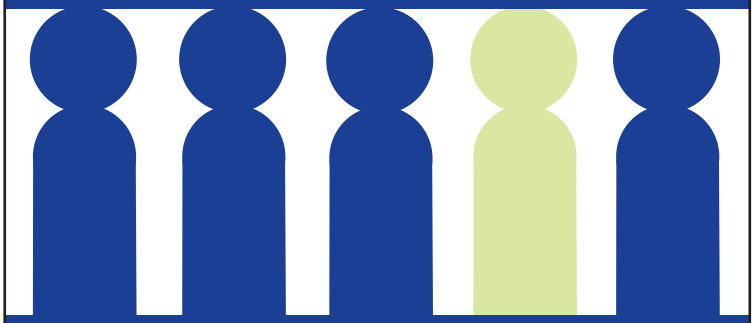
Summer Research Programs
Friday, August 5, 3:40 p.m. Ð 5:00 p.m.
William Hawkins Jr., MAA and University of the District of Columbia; Robert Megginson, University of Michigan

How to Apply for a Job
Friday, August 5, 2:00 p.m. Ð 3:20 p.m.
Estela A. Gavosto, University of Kansas

Writing for MAA Journals and Magazines
Saturday, August 6, 1:00 p.m. Ð 2:20 p.m.
Ivars Peterson (Director of Publications and Communications, MAA); Walter Stromquist (Editor, *Mathematics Magazine*)

Moving Up the Career Ladder in Academia
Saturday, August 6, 2:40 p.m. Ð 4:00 p.m.
Maeve McCarthy, Murray State University; Jacqueline Jensen, Sam Houston State University; Rebecca Garcia, Sam Houston State University; Georgia Benkart, University of Wisconsin
Moderator: Jacqueline Jensen, Sam Houston State University

Be Significαnt



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Undergraduate Student Activities

For full descriptions of the Undergraduate Student Sessions, go to http://www.maa.org/mathfest/students.html.

MAA-PME Student Reception
Wednesday, August 3, 4:30 p.m. Ð 5:30 p.m.

Math Jeopardy
Wednesday, August 3, 5:30 p.m. Ð 6:15 p.m.
Robert Vallin, Slippery Rock University; Michael Berry, University of Tennessee

Student Hospitality Center
Thursday, August 4, 9:00 a.m. Ð 5:00 p.m.
Friday, August 5, 9:00 a.m. Ð 5:00 p.m.
Saturday, August 6, 9:00 a.m. Ð 2:00 p.m.
Richard and Araceli Neal, American Society for the Communication of Mathematics

MAA Lecture for Students
Thursday, August 4, 1:00 p.m. Ð 1:50 p.m.
Roger Nelsen, Lewis & Clark College, *Math Icons*

MAA Undergraduate Student Activity
Friday, August 5, 1:00 p.m. Ð 1:50 p.m.
Dan Kalman, American University, *Polynomia Pasttimes*

MAA Undergraduate Student Activity
Friday, August 5, 1:00 p.m. Ð 1:50 p.m.
Doug Ensley, Shippensburg University
Unshuffling for the Imperfect Mathemagician

MAA Student Paper Sessions
Thursday, August 4, 8:30 a.m. Ð 10:25 a.m. and 2:00 p.m. Ð 6:15 p.m.
Friday, August 5, 8:30 a.m. Ð 11:45 a.m. and 2:00 p.m. Ð 6:15 p.m.
J. Lyn Miller, Slippery Rock University; Daluss Siewert, Black Hills State University

Pi Mu Epsilon Student Paper Sessions
Thursday, August 4, 2:00 p.m. - 6:15 p.m.
Friday, August 5, 8:30 a.m. Ð 11:45 a.m. and 2:00 p.m. Ð 6:15 p.m.
Angela Spalsbury, Youngstown State University

Pi Mu Epsilon Student Banquet and Awards Ceremony
Friday, August 5, 6:00 p.m. - 7:45 p.m.

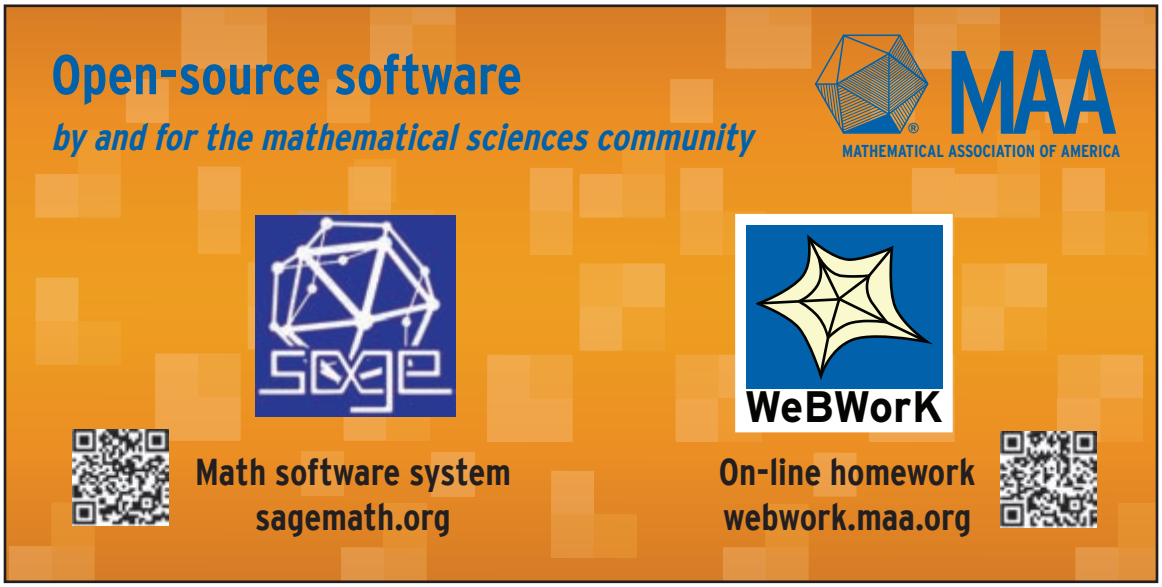
Pi Mu Epsilon J. Sutherland Frame Lecture
Friday, August 5, 8:00 p.m. Ð 8:50 p.m.
Margaret Wright, Courant Institute of Mathematical Sciences, *You Can't Top This: Making Things Better with Mathematics*

MAA Ice Cream Social
Friday, August 5, 9:00 p.m. Ð 10:00 p.m.

MAA Mathematical Competition in Modeling (MCM) Winners
Saturday, August 6, 9:00 a.m. Ð 10:30 a.m.
Ben Fusaro, Florida State University

Student Problem-Solving Competition
Saturday, August 6, 1:00 p.m. Ð 2:15 p.m.
Richard Neal, American Society for the Communication of Mathematics

Special Session: Great Talks for a General Audience: Coached Presentations by Graduate Students
Saturday, August 6, 1:00 Ð 5:30 p.m.
Jim Freeman, Cornell College; Rachel Schwell, Central Connecticut State University



Graduate Student Activities

For full descriptions of the Graduate Student Sessions, go to http://www.maa.org/mathfest/students.html.

What's the Story? A Graduate Student Workshop on Creating a Research Presentation for Undergraduates

Thursday, August 4, 2:00 p.m. – 3:20 p.m.

Aaron Luttman, Clarkson University; Rachel Schwell, Central Connecticut State University

Issues for Early-Career Mathematicians in Academia

Thursday, August 4, 4:10 p.m. – 5:30 p.m.

Doug Ensley, Shippensburg University

Graduate Student Reception

Thursday, August 4, 5:30 p.m. - 6:30 p.m.

Estela A. Gavosto, University of Kansas; James Freeman, Cornell College

Early-Career and Graduate Students PosterFest

Friday, August 5, 3:30 p.m. – 5:00 p.m.

Ed Aboufadel, Grand Valley State University; Aaron Luttman, Clarkson University; Bryant Mathews, Azusa Pacific University

How to Apply for a Job

Friday, August 5, 2:00 p.m. – 3:20 p.m.

Estela A. Gavosto, University of Kansas; Kim Roth, Juniata College; James Freeman, Cornell College; Estela Gavosto, University of Kansas; faculty member; industry representative

Great Talks for a General Audience: Coached Presentations by Graduate Students

Saturday, August 6, 1:00 p.m. - 5:30 p.m.

Jim Freeman, Cornell College; Rachel Schwell, Central Connecticut State University

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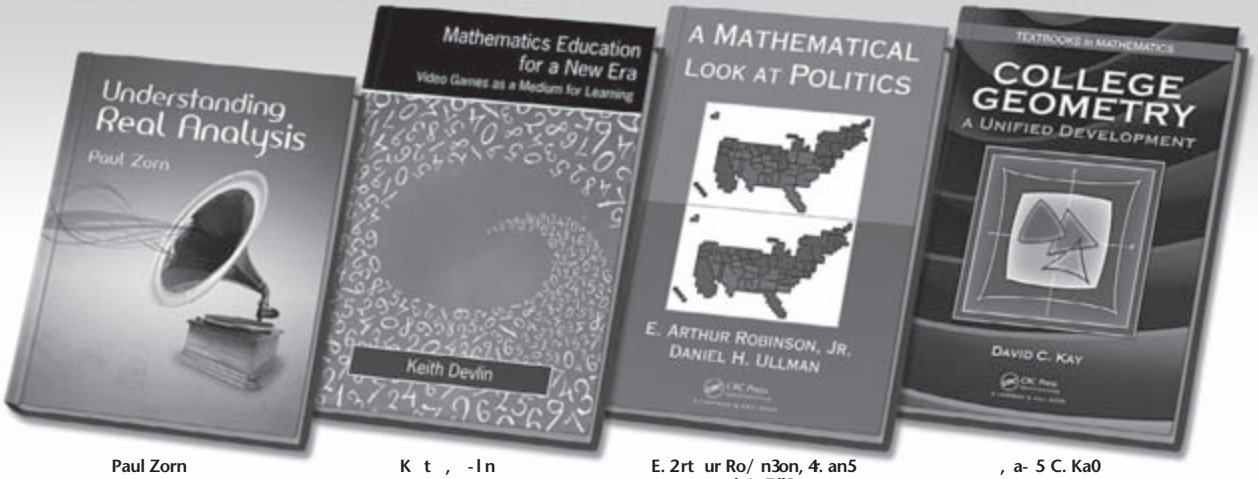

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Alder Awards

MathFest 2011, Lexington

In January 2003 the MAA established the Henry L. Alder Award for Distinguished Teaching by a Beginning College or University Mathematics Faculty Member to honor beginning college or university faculty whose teaching has been extraordinarily successful and whose effectiveness in teaching undergraduate mathematics is shown to have influence beyond their own classrooms. Each year, at most three college or university teachers are honored with this national award.

This yearÕ honorees are:

Alissa Crans, *Loyola Marymount University*
Sarah Eichhorn, *University of California, Irvine*
Sam Vandervelde, *St. Lawrence University*

Presentations will be given by the Award recipients
Friday, August 5, 2:00 p.m. Ð 3:20 p.m.

Count Me In!

Alissa S. Crans, *Loyola Marymount University*
Friday, August 5, 2:00 p.m. Ð 2:20 p.m.

Building and sustaining an inclusive mathematical community both locally and nationally has involved, and continues to require, the efforts of many, all working toward this common goal. It includes, among many other things, devoted mentoring, inspiring and engaging students at all levels, and increasing students' appreciation and enthusiasm for the beauty, creativity, and excitement of mathematics. While many challenges still remain, we will discuss my small efforts at "paying it forward" in my classes and in our community in gratitude for the support, advice, and encouragement I have received from the numerous mathematicians and professional organizations dedicated to increasing the number of women in the mathematical sciences.

Lessons Learned in Year One of Calculus Coordination

Sarah Eichhorn, *University of California, Irvine*
Friday, August 5, 2:30 p.m. Ð 2:50 p.m.

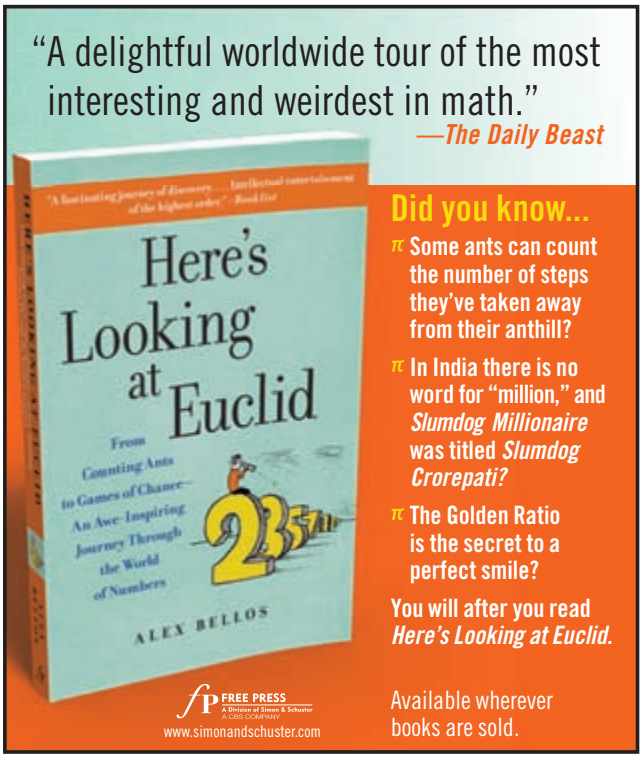
à e UC Irvine Mathematics Department recently instituted a highly coordinated approach to teaching our differential and integral calculus courses, including a common final exam. From the plethora of data from over 6,000 students a year, we have found interesting and unexpected results about how our students learn calculus and what teaching strategies are most effective.

Topics presented will include assessment of placement testing, impact of class size on learning, setting expectations for rigor, writing a common final, and miscellaneous insights on student comprehension of calculus. Obviously, many of these are deep, rich topics worth hours of discussion in their own right. à is talk will present a light overview of some key insights and surprises found in the first year of coordinating our calculus instruction.

Greater Than the Sum of its Parts

Sam Vandervelde, *St. Lawrence University*
Friday, August 5, 3:00 p.m. Ð 3:20 p.m.

To the uninitiated it may seem that the ideal mathematics position would involve teaching smart kids at a prestigious institution, preferably with a generous complement of graders and well-equipped classrooms. Fortunately, a productive, rewarding teaching career is largely independent of all these criteria. To illustrate the sorts of factors that have actually made a significant impact upon my quality of life as a teacher we will consider Mathematical Outings, IF-AT movies, and the case of Chris. For it is in the fabulous subject we teach, the new ideas we encounter and implement, and the students whom we inspire and by whom we are challenged that teaching exceeds our expectations.



SIGMAA Activities

For full descriptions of the SIGMAA Activities, go to http://www.maa.org/mathfest/sigmaa.html.

History of Mathematics

Contributed Paper Session: The History of Mathematics and Its Uses in the Classroom

Session 1, Thursday, August 4, 3:30 p.m. - 5:30 p.m., Elkhorn A
Session 2, Saturday, August 6, 8:30 a.m. - 11:30 a.m., Elkhorn A

Math Circles for Students and Teachers

Math Circles Demonstrations

Session 1, Thursday, August 4, 4:30 p.m. Ð 5:30 p.m.
Session 2, Saturday, August 6, 1:00 p.m. Ð 2:00 p.m.
Session 3, Saturday, August 6, 3:00 p.m. Ð 4:00 p.m.

Contributed Paper Session: Fostering, Supporting, and Propagating Math Circles for Students and Teachers

Session 1, Thursday, August 4, 8:30 a.m. - 10:30 a.m., Elkhorn A
Session 2, Friday, August 5, 8:30 a.m. - 10:05 a.m., Elkhorn A
Discussion Session, Friday, August 5, 10:10 a.m. - 10:30 a.m., Elkhorn A

Math Wrangle

Saturday, August 6, 10:00 a.m. Ð 11:30 a.m., Heritage 2

Mathematical and Computational Biology

Contributed Paper Session: Trends in Undergraduate Mathematical Biology Education

Thursday, August 4, 1:00 p.m. - 2:40 p.m., Elkhorn C

Environmental Mathematics

Guest Lecture

Thursday, August 4, 4:00 p.m. Ð 4:45 p.m.

Business Meeting

Thursday, August 4, 4:45 p.m. Ð 5:30 p.m.

Bus Trip: The Environment & Hydrology of the Lexington Region

Saturday, 1:30 p.m. Ð 5:30 p.m.
Leader: Peter Idstein, Dept. of Earth & Environ. Science, Univ. of Kentucky

Mathematics Instruction Using the Web

Business Meeting

Friday, August 5, 5:00 p.m. - 6:00 p.m.

Guest Lecture

Andrew Bennett, Kansas State University
Friday, August 5, 5:00 p.m. - 6:30 p.m.

Touchable Math with HTML5

Philosophy of Mathematics

Reception

Thursday, August 4, 5:00 p.m. Ð 5:30 p.m.

Guest Lecture

Neil Tennant, Department of Philosophy, Ohio State University
Thursday, August 4, 5:30 p.m. Ð 6:30 p.m.

Quantitative Literacy

Panel: Assessing Quantitative Literacy

Thursday, August 4, 2:35 p.m. Ð 3:55 p.m.

Research in Undergraduate Mathematics Education

Designing Instruction That Builds on StudentsÕ Ways of Reasoning in Linear Algebra

Session 1, Thursday, August 4, 3:40 p.m. - 5:00 p.m.
Session 2, Friday, August 5, 3:40 p.m. - 5:00 p.m.

Statistics Education

Contributed Paper Session: What I Wish I Knew the First (or Second or É n^{th}) Time I Taught Statistics

Friday, August 5, 1:00 p.m. - 3:00 p.m., Elkhorn A

Teaching Advanced High School Mathematics

Contributed Paper Session: Teaching High School Mathematics: Beautiful Lessons Found on the Scenic Route

Saturday, August 6, 1:00 p.m. - 3:00 p.m., Elkhorn D

Business Meeting

Saturday, August 6, 5:00 p.m. - 6:00 p.m.

Minicourses

MINICOURSE 1

A Dynamical Systems Approach to the Differential Equations Course

Part 1, Thursday, August 4, 1:00 p.m. Ð 3:00 p.m.
Part 2, Friday, August 5, 1:00 p.m. Ð 3:00 p.m.

à is minicourse will give an overview of the Boston University Differential Equations Project, originally funded by the National Science Foundation. à e BU project involves a complete redesign of the sophomore-level ODE course. It includes more emphasis on qualitative and geometric methods as well as the incorporation of technology and numerical methods throughout. à is minicourse will be useful to college instructors wishing to restructure their ODE courses. Participants need to bring computers or graphing calculators.

Presenter: Paul Blanchard, Boston University

MINICOURSE 2

Alternatives to Traditional Grading to Enhance Student Learning

Part 1, Thursday, August 4, 1:00 p.m. Ð 3:00 p.m.
Part 2, Friday, August 5, 1:00 p.m. Ð 3:00 p.m.

à e first part of this course covers using holistic grading rubrics rather than standard points allocation. à ese rubrics provide greater consistency in grading, give better feedback for students, and result in more efficiency for instructors. à e rubrics are extremely flexible, allowing their use on various types of problems and assignments. à e second half covers a "points-free" approach to running a course. We explain how to implement this design, while also discussing the deep-learning benefits inherent in this method. In both parts, we work with hands-on examples to see directly how these assessment tools are easily applied. Materials will be provided.

Presenters: Michael A. Brilleslyper and Beth Schaubroeck, U.S. Air Force Academy

MINICOURSE 3

An In-Class Role-Playing Game for Quantitative Literacy: Social Security, 1935

Part 1, Friday, August 5, 3:30 p.m. Ð 5:30 p.m.
Part 2, Saturday, August 6, 3:30 p.m. Ð 5:30 p.m.

Participants will play and learn to be game-masters for a role-playing game we have developed for quantitative literacy (QL) classes, based on the 1935 legislation that founded Social Security in the United States. Players (as representatives in the U.S. House) present quantitative arguments for or against including pensions and/or insurance for disability, unemployment, or health care in the legislation. All of these provisions were under consideration at that time. QL topics include regression, histograms, mean vs. median, inflation, and estimation skills. à is is part of an NSF grant to extend the "Reacting to the Past" role-playing pedagogy to STEM fields. Participants are encouraged to bring laptop computers to the session.

Presenters: John Curran and Andrew M. Ross, Eastern Michigan University

MINICOURSE 4

Recruiting Students to Take More Mathematics Courses and to Be Math Majors

Part 1, Thursday, August 4, 3:30 p.m. Ð 5:30 p.m.
Part 2, Saturday, August 6, 1:00 p.m. Ð 3:00 p.m.

We will discuss some principles and specific activities we have used to increase the number of students taking mathematics courses and becoming math majors. Principles include creating a culture of "Math is cool!"; exposing students to careers and opportunities available to those who study mathematics, and being proactive in your efforts. Specific activities include a "Careers in Mathematics" seminar, a freshman/sophomore class titled "Intro to Being a Math Major," the creation of a student advisory council, a big-screen HDTV display with a PowerPoint presentation about mathematics, a set of math T-shirts, and the "When Will I Use Math" website.

Presenter: Michael Dorff, Brigham Young University

MINICOURSE 5

Elementary Mathematics in Architecture

Part 1, Thursday, August 4, 3:30 p.m. Ð 5:30 p.m.
Part 2, Saturday, August 6, 1:00 p.m. Ð 3:00 p.m.

à is minicourse will give examples of basic mathematics, chiefly elementary geometry, algebra, and trigonometry, properties of vectors, and coordinate geometry used in architecture. à e architecture that is informed includes classical Greek architecture, the Roman arch, the dome of the Cathedral of Florence, and the design (by Arup) of the concourse beams and the roof vaults (by Utzon) of the Sydney Opera House. Possible other topics include: hanging chains and rising domes: from Hooke to the dome of St. Peter's Basilica; calculus and the weights of the domes of the Pantheon and the Hagia Sophia, and the shape of the ideal arch.

Presenter: Alexander J. Hahn, University of Notre Dame

Short Course

The MAA MathFest Short Course is presented in honor of William F. Lucas.

Trends in Mathematical Biology

August 2 & 3, 9:00 a.m. - 5:00 p.m., Bluegrass Room, Salon A, Hilton Hotel

Organizers: Holly Gaff, St. John's University/College of St. Benedict; Jennifer Gallovich, Old Dominion University

And your last biology course was ... when? Many of us have little (or woefully outdated) background in the biological sciences; however, the list of enrollees in our courses will include students whose primary interests are in biology, environmental science, the allied health sciences, and so on. In the last decade or so, there has been a great deal of energy directed to the transformation of life science education through the integration of mathematical and computational content—but how will we implement these approaches in the mathematics classroom? Can we find common ground (or common curriculum!) with our colleagues in the biological sciences?

à e purpose of this short course is to introduce participants to a range of current topics in mathematical biology. Moreover, mathematical biology has exploded in recent years, developing new perspectives on both parent disciplines by combining biological and mathematical ideas and tools in sometimes unexpected ways. So we also hope that this short course will begin a continuing conversation on how we might integrate such modern applications into the undergraduate mathematics program.

à is short course will consist of seven invited presentations taking place over two days. Each presenter will discuss his or her own research and offer suggestions as to how the topic might be included in various mathematics and/or biology courses. We will conclude with a group discussion of the challenges and opportunities of implementation in the undergraduate mathematics curriculum. All participants will be encouraged to suggest particular ways the short course topics might be incorporated into new or existing courses and how we might build a platform for further conversation with colleagues in the life sciences.

We expect a lively discussion!

PRESENTERS:

Janet Best, *Ohio State University and Mathematical Biosciences Institute*
Planting Seeds by Mining the Mind: Examples from Mathematical Neuroscience Get Students Thinking

Philip Crowley, *University of Kentucky*
Some Applications of Game Theory in Evolutionary Ecology

Renee Fister, *Murray State University*
Can Math Cure Cancer?

Holly Gaff, *Old Dominion University*
Ticks Can Give You More Than the Creeps—Mathematical Modeling of Tick-Borne Diseases

Lou Gross, *Director, NIMBioS, and University of Tennessee Knoxville*
Drugs, Sex, and Rock 'n' Roll: Biology Examples to Motivate Undergraduate Math Classes

Terrell Hodge, *Western Michigan University*
Tree Tapping and Network Mapping: Adventures in, and Applications of, Modern Discrete Mathematics

Winfried Just, *Ohio University*
Modeling the Dynamics of Biological Networks

MINICOURSE 6

The Mathematics of Folding & Unfolding

Part 1, Friday, August 5, 3:30 p.m. Ð 5:30 p.m.
Part 2, Saturday, August 6, 3:30 p.m. Ð 5:30 p.m.

How many ways are there to flatten a cube? How can you cut out block letters for a whole word all at once with one straight scissors cut? Can every polygon fold to a polyhedron? à ese questions can be answered through the mathematics of folding and unfolding. We will study the mathematics underlying origami and unfolding of polyhedra, introducing fascinating combinatorial and geometric concepts that let students supplement their mathematical understanding with physical intuition. à ey can check conjectures and proofs by manipulating paper in their hands. à ese problems reach the frontiers of current mathematical research and provide accessible unsolved problems. Participants will fold, cut, and tape paper to experience how tactile manipulation leads to greater understanding of the folding theorems discussed.

Presenter: Joseph O'Rourke, Smith College

Workshops and Other Sessions

For full descriptions of Workshops and Other Sessions, go to http://www.maa.org/mathfest/othermath.html.

Judging High School Contests
Wednesday, August 3, 4:00 p.m. Ð 5:30 p.m.
Ben Fusaro, Florida State University

WhatÕs the Story? A Graduate Student Workshop on Creating a Research Presentation for Undergraduates
Thursday, August 4, 2:00 p.m. Ð 3:20 p.m.
Aaron Luttman, Clarkson University; Rachel Schwell, Central Connecticut State University

MAA Section Officers Meeting
Thursday, August 4, 3:30 p.m. Ð 5:00 p.m.

Poster Session: Celebrating AWM Student Chapters
Friday, August 5, 1:00 p.m. Ð 2:30 p.m.
Maia Averett, Mills College

Early-Career and Graduate Students PosterFest
Friday, August 5, 3:30 p.m. Ð 5:00 p.m.
Ed Aboufadel, Grand Valley State University; Aaron Luttman, Clarkson University; Bryant Mathews, Azusa Pacific University

Math Circles Demonstrations
Session 1, Thursday, August 4, 4:30 p.m. Ð 5:30 p.m.
Session 2, Saturday, August 6, 1:00 p.m. Ð 2:00 p.m.
Session 3, Saturday, August 6, 3:00 p.m. - 4:00 p.m.
James Tanton, St. Mark's School; Tatiana Shubin, San Jose State University

Designing Instruction That Builds on StudentsÕ Ways of Reasoning in Linear Algebra
Session 1, Thursday, August 4, 3:40 p.m. Ð 5:00 p.m.
Session 2, Friday, August 5, 3:40 p.m. Ð 5:00 p.m.
Sean Larsen, Portland State University; Stacy Brown, Pitzer College; Natasha Speer, University of Maine; Karen Marrongelle, Portland State University

Presenters: Megan Wawro, San Diego State University; George Sweeney, San Diego State University; Michelle Zandieh, Arizona State University; Christine Larson, Vanderbilt University

MAA Prize Session
Friday, August 5, 11:00 a.m. Ð 12:00 a.m.

Alder Award Session
Friday, August 5, 2:00 p.m. Ð 3:20 p.m.

Presentations by the Alder Award Recipients
2:00 p.m. Alissa Crans, Loyola Marymount University
2:30 p.m. Sarah Eichhorn, University of California, Irvine
3:00 p.m. Sam Vandervelde, St. Lawrence University

Math Wrangle
Hosted by SIGMAA Math Circles
Saturday, August 6, 10:00 a.m. Ð 11:30am, Heritage 2

MAA Business Meeting
Saturday, August 6, 11:00 a.m. Ð 11:50 a.m.

Great Talks for a General Audience: Coached Presentations by Graduate Students
Saturday, August 6, 1:00 p.m. Ð 5:30 p.m.
Jim Freeman, Cornell College; Rachel Schwell, Central Connecticut State University

Natural Resource Modeling is an international journal devoted to mathematical modeling of natural resource systems. It reflects the conceptual and methodological core that is common to model building throughout disciplines including such fields as forestry, fisheries, economics and ecology.

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Exhibitors

Exhibit Hall: Lexington Convention Center, Level 1

Wednesday, August 3: 6:00 p.m. – 7:30 p.m.
Thursday, August 4: 9:00 a.m. – 5:00 p.m.
Friday, August 5: 9:00 a.m. – 5:00 p.m.
Saturday, August 6: 9:00 a.m. – 2:00 p.m.

American Mathematical Society (AMS)

The American Mathematical Society was founded in 1888 to further the interests of mathematical research and scholarship, and serves the national and international communities. The AMS publishes books, journals (electronic and print), and MathSciNet—the Mathematical Reviews Database. Our top-tier research publications span the entire spectrum of pure and applied mathematics for professionals, graduate students, and advanced undergraduates. For more information or to purchase AMS publications, go to www.ams.org/bookstore.

Association for Women in Mathematics

The Association for Women in Mathematics (AWM) is a non-profit organization founded in 1971. The purpose of the Association for Women in Mathematics is to encourage women and girls to study and to have active careers in the mathematical sciences, and to promote equal opportunity and the equal treatment of women and girls in the mathematical sciences. AWM currently has more than 3000 members (women and men) representing a broad spectrum of the mathematical community — from the United States and around the world!

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CRC Press is the publisher of well-known mathematics titles under the imprint of Chapman & Hall/CRC. With the acquisition of A K Peters, we have considerably strengthened our program across the entire field of mathematics. Our featured titles this year are: *Mathematics Education for a New Era*, Keith Devlin, *You Can Count on Monsters,* Richard Schwartz, *Differential Geometry of Curves and Surfaces*, Thomas Banchoff, *Understanding Real Analysis*, Paul Zorn, *Mathematics for the Environment*, Martin Walter, *A Mathematical Look at Politics*, Arthur Robinson and Daniel Ullman; and *CRC Standard Mathematical Tables and Formulae*, 32nd Edition, Daniel Zwillinger.

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We supply academic and professional t-shirts at all types of educational and professional conferences. Unlike our few competitors who carry only their own merchandise, we carry the best designs of many different creative companies and individuals in addition to our designs. This is gives us a much more varied and interesting look and choices for the attendees. Please visit us at booth #15.

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Make Textbooks Affordable is a non-profit student campaign to reduce textbook costs by promoting affordable alternatives like open-access textbooks. The campaign is a project of the Student PIRGs, which is a national network of state-based student groups that work to solve problems related to the environment, consumer protection, and government reform. http://www.studentpirgs.org/open-textbooks.

MAA American Mathematics Competitions

The mission of the MAA Competitions is to increase interest in mathematics and to develop problem solving through a fun competition. Students gain the opportunity to learn and achieve through competition with students in their school and from around the world. Teachers and schools benefit from the chance to challenge students with interesting mathematical questions that are aligned with curriculum standards at all levels of difficulty.

Exhibitors (continued)

Exhibit Hall: Lexington Convention Center, Level 1

Wednesday, August 3: 6:00 p.m. – 7:30 p.m.
Thursday, August 4: 9:00 a.m. – 5:00 p.m.
Friday, August 5: 9:00 a.m. – 5:00 p.m.
Saturday, August 6: 9:00 a.m. – 2:00 p.m.

MAA-Publications

The Mathematical Association of America (MAA) is the largest professional society that focuses on mathematics accessible at the undergraduate level. Books, journals, DVDs, and professional development programs are just a few of the offerings available from the MAA. Place an order during MathFest this year and receive free shipping and handling and discounts below member prices. The MAA is also absorbing the sales tax on meeting orders.

MAA-Membership

Do you have a great t-shirt idea? Stop by the MAA Membership booth to see how you can enter to design our 2012 t-shirt. While you're there, check out the winning 2011 design along with our youth t-shirts designed by MAA author John DePillis.

Madison Convention & Visitors Bureau

Greater Madison Convention & Visitors Bureau welcoming Mathematical Association of America's MathFest 2012 at Monona Terrace Community & Convention Center www.mononaterrace.com. Visit our booth #41 and sign up for our visitor e-news to register to win a complimentary MathFest 2012 registration & accommodations package. Visit www.visitmadison.com for complete Madison information.

Maplesoft

Maplesoft's core technology is the world's most advanced symbolic computation engine, which is the foundation for all of its products, including MapleT, the technical computing and documentation environment; Maple T.A., a web-based system for creating and assessing online tests and assignments; and the Maple T.A. MAA Placement Test Suite which offers the renowned Mathematical Association of America (MAA) placement tests in an online environment.

Math for America - SPONSOR

Math for America (MfA) is a private nonprofit organization with a mission to improve mathematics education in US public secondary schools. MfA offers Fellowships for new and experienced teachers and school leaders, including: the MfA Fellowship, which aims to increase the number of mathematically talented individuals entering the teaching profession; the MfA Early Career Fellowship and the MfA Master Teacher Fellowship, which support outstanding mathematics teachers already in the classroom; and the MfA School Leaders Fellowship, which is designed to support experienced mathematics teachers who have moved into administrative positions and oversee mathematics instruction in their schools.

Mathematical Sciences Publishers/ InvolveÑ A Journal of Mathematics

Mathematical Sciences Publishers (MSP) is a nonprofit organization located at UC Berkeley, run for and by mathematicians, and dedicated to publishing academic journals and books at the lowest cost but highest quality. MSP is the home of long-standing journals such as *Geometry & Topology* and *Algebraic & Geometric Topology*, as well as *Involve - A Journal of Mathematics*. *Involve* is dedicated to showcasing and encouraging high-quality mathematical research involving students (at all levels). For more information, visit http://mathscipub.org.

McGraw-Hill Higher Education

McGraw-Hill Higher Education is a leading innovator in the development of 21st century teaching and learning solutions for postsecondary and higher education markets worldwide. We empower and prepare professionals and students through a comprehensive range of traditional and digital education content and tools to connect, learn and succeed.

National Association of Math Circles - SPONSOR

The National Association of Math Circles provides a community for Math Circles and similar programs via a website http://mathcircles.org. This is fun and interactive website includes a database of Math Circles worldwide, a wiki started by Sam Vandervelde's *Circle in a Box Math Circle* book, a Math Circle Problem and Lesson Collection, as well as a developing forum for discussion of Math Circle–related ideas. Visit our booth to learn more or attend one of the SIGMAA-MCST sessions to learn more about Math Circles.

National Security Agency (NSA)

The NSA/CSS core missions are to protect U.S. national security systems and to produce foreign signals intelligence information. The Information Assurance mission confronts the formidable challenge of preventing foreign adversaries from gaining access to sensitive or classified national security information. The Signals Intelligence mission collects, processes, and disseminates intelligence information from foreign signals for intelligence and counterintelligence purposes and to support military

Exhibitors (continued)

Exhibit Hall: Lexington Convention Center, Level 1
Wednesday, August 3: 6:00 p.m. – 7:30 p.m.
Thursday, August 4: 9:00 a.m. – 5:00 p.m.
Friday, August 5: 9:00 a.m. – 5:00 p.m.
Saturday, August 6: 9:00 a.m. – 2:00 p.m.

operations. à is Agency also enables Network Warfare operations to defeat terrorists and their organizations at home and abroad, consistent with U.S. laws and the protection of privacy and civil liberties.

Only In Kentucky

Only In Kentucky is the place to get all your game day gear and more. You can find everything you will ever need to deck yourself out from head to toe with the latest University of Kentucky apparel. We feature a large assortment of men's and women's t-shirts, jerseys, sweatshirts and hats. Only In Kentucky also carries a large selection of Kentucky Proud foods from Makers Mark Bourbon Balls to Sweet Dillies Pickles! Only In Kentucky makes it easy to get all your UK apparel, merchandise and gifts all in one spot and conveniently located just across the street from Rupp Arena.

Pearson

As a leading publisher in mathematics, we are pleased to present the most innovative, easy-to-use, well-integrated online teaching and learning tools available for your courses. Browse our booth to find the perfect solution for your classes, your students, and you.

Robert Carden Art

Robert Carden is a self-taught artist who creates original hand-drawn and hand-designed pen and inks and collages. It is all mathematical and geometrical in nature and includes fractals, perspective drawings and more. None of it is computer generated.

Smart Scholarship Program

à e Science, Mathematics And Research for Transformation (SMART) Scholarship for Service Program is an opportunity for students pursuing an undergraduate or graduate degree in Science, Technology, Engineering, and Mathematics (STEM) disciplines to receive a full scholarship and be employed upon degree completion at a DoD research facility. Scholarships awarded include a cash award of $25,000 to $41,000 a year, full tuition, required fees, health insurance allowance, and book allowance. à e SMART Program will allow individuals to acquire an education in exchange for a period of employment with the Department of Defense. à e program is intended for citizens of the United States; students must be at least 18 years of age to be eligible for an award. Please visit smart.asee.org for more information

Society of Actuaries

à e Society of Actuaries (SOA) is the largest professional organization dedicated to serving approximately 22,000 actuarial members and the public in the United States, Canada and worldwide. à e SOA's vision is for actuaries to be the leading professionals in the measurement and management of risk. To learn more please visit www.soa.org. à e Be an Actuary website, www.beanactuary.org, is designed to inspire high school students and career changers, as well as their influencers, to consider actuarial science as a career.

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Exhibitors (continued)

Exhibit Hall: Lexington Convention Center, Level 1

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Friday, August 5: 9:00 a.m. – 5:00 p.m.
Saturday, August 6: 9:00 a.m. – 2:00 p.m.

University of California, Riverside, Mathematics Department

à e University of California at Riverside, Mathematics Department is pleased to join this event. With 39 Ph.D. programs, 37 Master's programs and 17 state teaching credential programs, UCR offers a wide range of opportunities for graduate study and research. As the fastest growing university in the University of California system we have constructed new, state-of-the-art buildings and developed new graduate programs to provide unprecedented opportunities for our graduate students. We will have a representative on hand to give you information about the UCR Mathematics Graduate programs in Pure and Applied Math as well as a representative from the UCR Statistics Department. A current graduate student will also be available to talk to you more in depth about what it means to be a member of the mathematics department and answer any questions you may have.

University of Kentucky-Mathematics Department

à e University of Kentucky Department of Mathematics plays a central role in the education, research and service missions of the University of Kentucky. Our department offers bachelors', masters', and doctoral degrees. We have an active undergraduate program that offers a Bachelor of Arts and Bachelor of Science degree in Mathematics and Mathematical Sciences. à e Department collaborates with the Department of Economics in the Gatton College of Business to offer the Mathematical Economics major. Our graduate program enrolls about 60 graduate students and our graduates move on to academic tenure-track postions, post-doctoral positions and to government and industry. Stop by booth #19 to learn a little bit more about out Math program!

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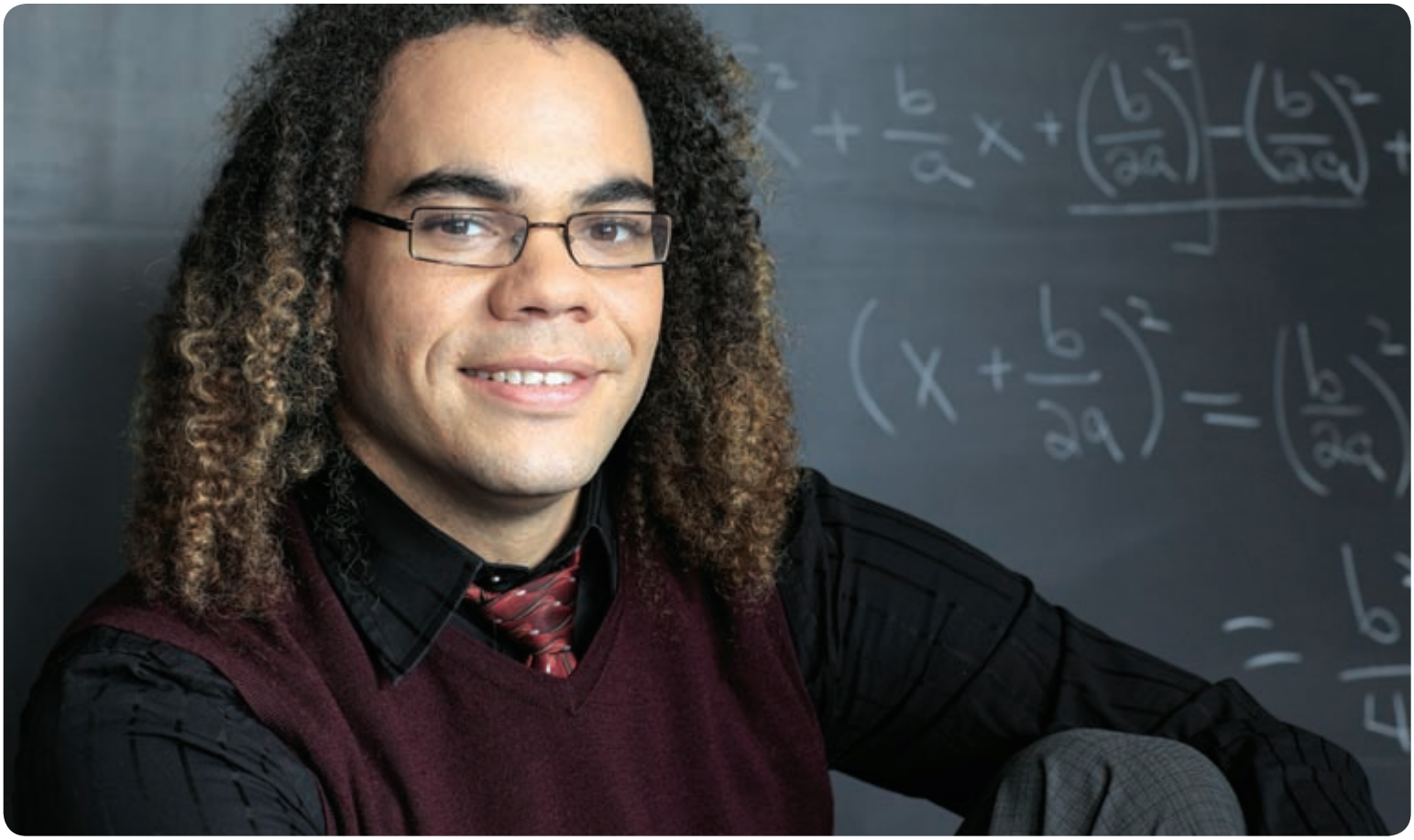

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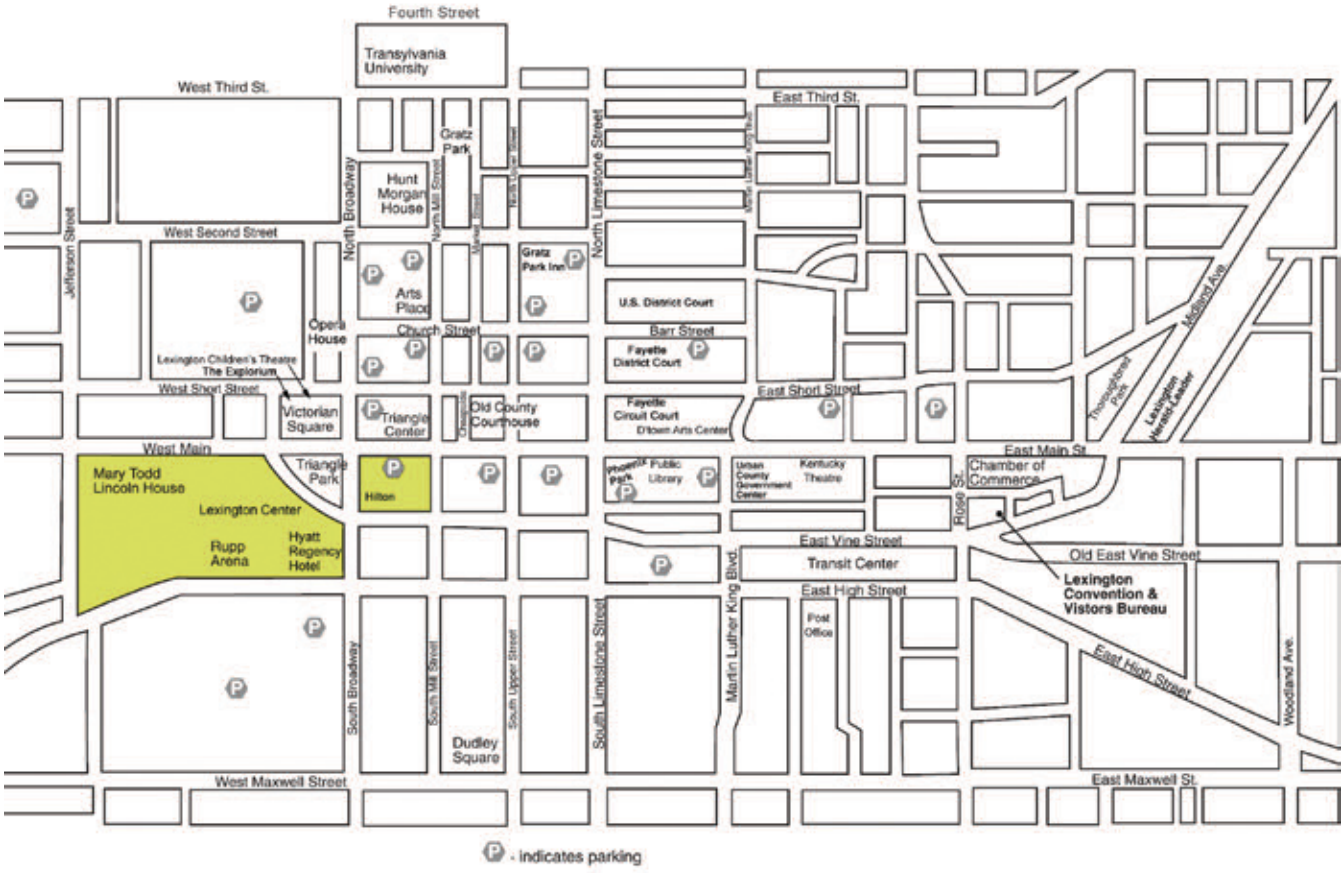
Map of Lexington



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Lexington Convention Center
Level 1

Thursday, August 4: 9:00 a.m. – 5:00 p.m.
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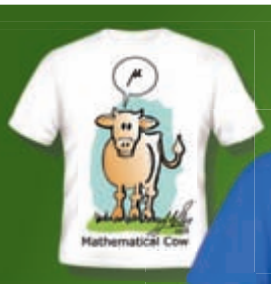

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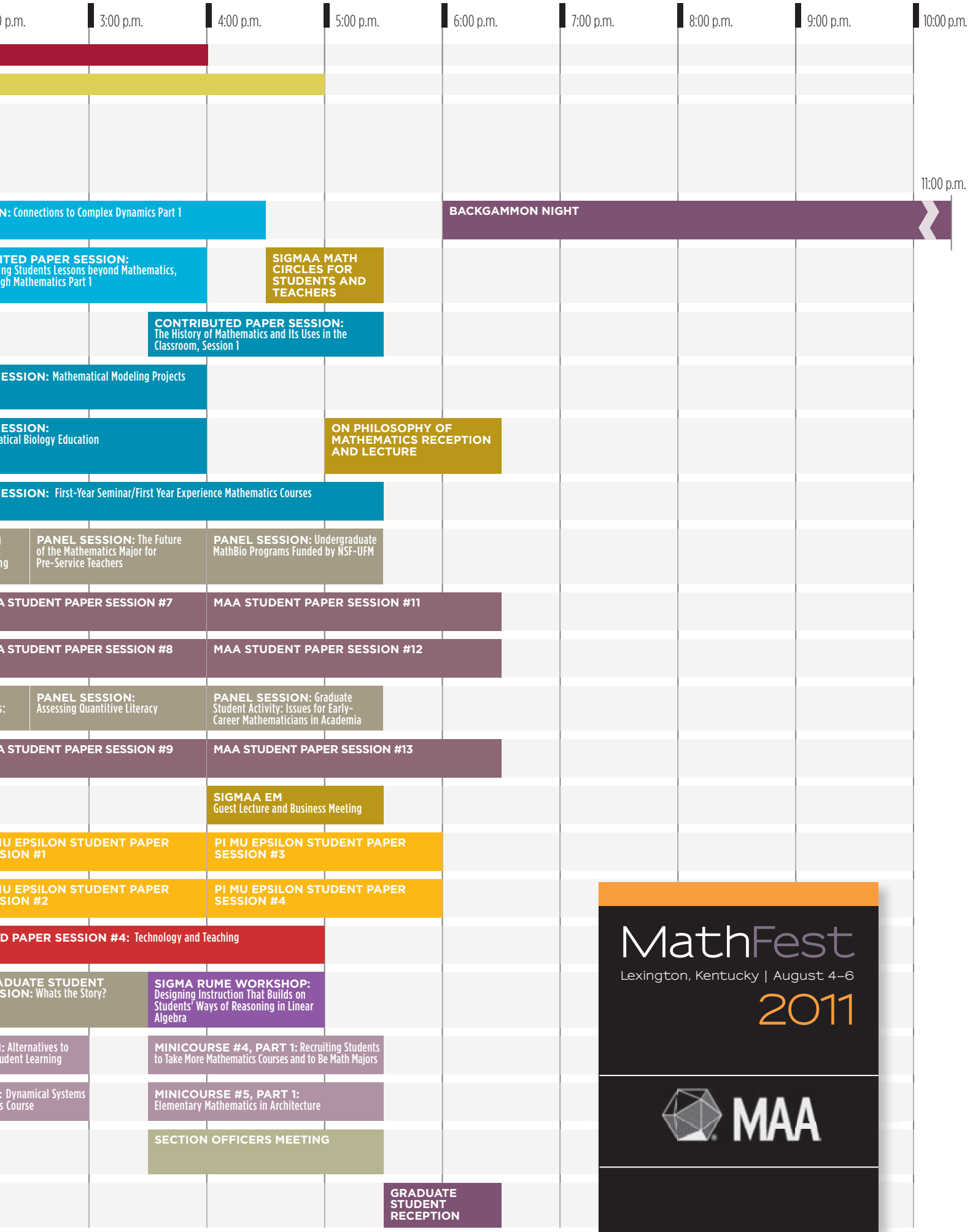
THURSDAY August 4, 2011

	8:00 a.m.	9:00 a.m.	10:00 a.m.	11:00 a.m.	12:00 p.m.	1:00 p.m.	2:00
Registration	**REGISTRATION** (MathFast 2011 Registration is located in the Lexington Convention Center on Level 1)						
Exhibit Hall		**EXHIBIT HALL/STUDENT HOSPITALITY CENTER** (Located in the Heritage Ballroom East Level 1)					
Heritage Ballroom, Center		**AMS/MAA JOINT INVITED ADDRESS - POLYNOMIAL DYNAMICS:** Conjugacy and Combinatorics by Laura DeMarco	**MAA INVITED ADDRESS:** Planting your Roots in the Natural Numbers by Edward Burger	**EARLE RAYMOND HEDRICK LECTURE:** From Right-Angled Triangles to Algebraic Curves by Manjul Bhargava		**MAA LECTURE FOR STUDENTS:** Math Icons by Roger Nelsen	
Heritage Ballroom 2 (LC)						**INVITED PAPER SESSIO**	
Heritage Ballroom 3 (LC)							**INV** Offeri throu
Elkhorn A (LC)		**CONTRIBUTED PAPER SESSION:** Fostering, Supporting, and Propagating Math Circles for Students and Teachers					
Elkhorn B (LC)		**CONTRIBUTED PAPER SESSION:** Mathematical Modeling Projects That Matter, Session 1				**CONTRIBUTED PAPER S** That Matter, Session 2	
Elkhorn C (LC)		**GENERAL CONTRIBUTED PAPER SESSION #1:** History and Philosphy				**CONTRIBUTED PAPER S** Trends in Undergraduate Mathema	
Elkhorn D (LC)		**GENERAL CONTRIBUTED PAPER SESSION #2:** Teaching and Learning				**CONTRIBUTED PAPER S**	
Thoroughbred 1 (LC)						**PANEL SESSION:** Assessing Mathematics Courses for Students in Business, Education, Engineerin and Nursing	
Thoroughbred 2 (LC)		**MAA STUDENT PAPER SESSION #1**					**MAA**
Thoroughbred 3 (LC)		**MAA STUDENT PAPER SESSION #2**					**MAA**
Thoroughbred 4 (LC)						**PANEL SESSION:** Teaching Mathematics with the New Tablets iPads, Slates and Smartphones	
Thoroughbred 5 (LC)		**MAA STUDENT PAPER SESSION #3**					**MAA**
Thoroughbred 6 (LC)		**MAA STUDENT PAPER SESSION #4**					
Thoroughbred 7 (LC)		**MAA STUDENT PAPER SESSION #5**					**PI M SES**
Thoroughbred 8 (LC)							**PI M SES**
Berea Room (LC)		**GENERAL CONTRIBUTED PAPER SESSION #3:** Applied Mathematics				**GENERAL CONTRIBUTE**	
Patterson A (Hyatt)							**GRA SES**
Woodford/Scott Suite (Hyatt)						**MINICOURSE #2, PART 1** Traditional Grading to Enhance St	
Jessamine/Franklin Suite (Hyatt)						**MINICOURSE #1, PART 1** Approach to Differential Equation	
Ballroom D (Hilton Hotel)							
Hyttops (Hyatt Hotel)							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N: Connections to Complex Dynamics Part 1
BACKGAMMON NIGHT
ITED PAPER SESSION:
ng Students Lessons beyond Mathematics,
gh Mathematics Part 1
SIGMAA MATH CIRCLES FOR STUDENTS AND TEACHERS
CONTRIBUTED PAPER SESSION:
The History of Mathematics and Its Uses in the Classroom, Session 1
ESSION: Mathematical Modeling Projects
ESSION:
atical Biology Education
ON PHILOSOPHY OF MATHEMATICS RECEPTION AND LECTURE
ESSION: First-Year Seminar/First Year Experience Mathematics Courses
PANEL SESSION: The Future of the Mathematics Major for Pre-Service Teachers
PANEL SESSION: Undergraduate MathBio Programs Funded by NSF-UFM
A STUDENT PAPER SESSION #7
MAA STUDENT PAPER SESSION #11
A STUDENT PAPER SESSION #8
MAA STUDENT PAPER SESSION #12
PANEL SESSION:
Assessing Quantitive Literacy
PANEL SESSION: Graduate Student Activity: Issues for Early-Career Mathematicians in Academia
A STUDENT PAPER SESSION #9
MAA STUDENT PAPER SESSION #13
SIGMAA EM
Guest Lecture and Business Meeting
U EPSILON STUDENT PAPER SION #1
PI MU EPSILON STUDENT PAPER SESSION #3
U EPSILON STUDENT PAPER SION #2
PI MU EPSILON STUDENT PAPER SESSION #4
D PAPER SESSION #4: Technology and Teaching
ADUATE STUDENT SION: Whats the Story?
SIGMA RUME WORKSHOP:
Designing Instruction That Builds on Students' Ways of Reasoning in Linear Algebra
: Alternatives to udent Learning
MINICOURSE #4, PART 1: Recruiting Students to Take More Mathematics Courses and to Be Math Majors
: Dynamical Systems s Course
MINICOURSE #5, PART 1:
Elementary Mathematics in Architecture
SECTION OFFICERS MEETING
GRADUATE STUDENT RECEPTION
MathFest
Lexington, Kentucky | August 4–6
2011
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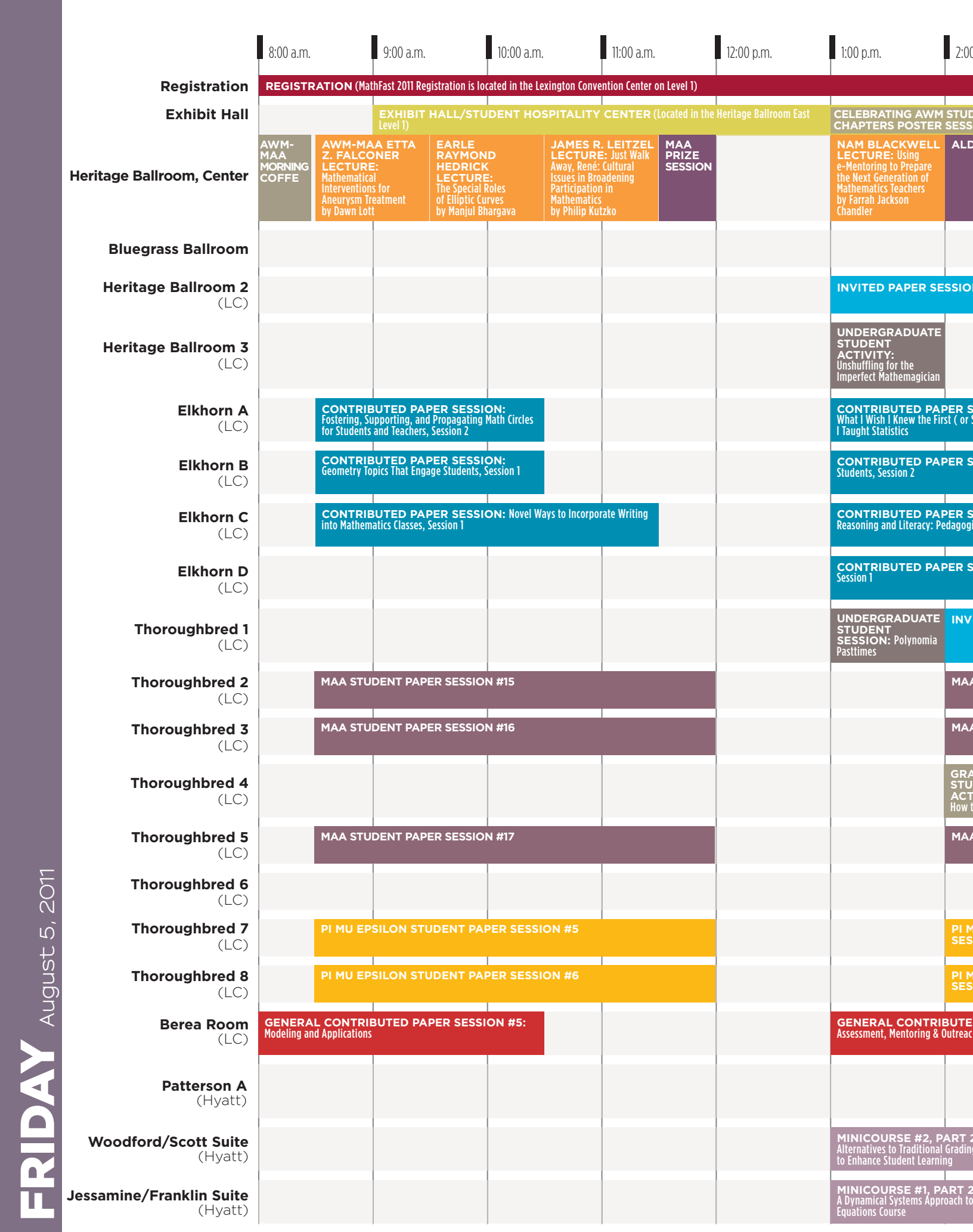
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Registration
REGISTRATION (MathFast 2011 Registration is located in the Lexington Convention Center on Level 1)
Exhibit Hall
EXHIBIT HALL/STUDENT HOSPITALITY CENTER (Located in the Heritage Ballroom East Level 1)
CELEBRATING AWM STUD CHAPTERS POSTER SESS
Heritage Ballroom, Center
AWM-MAA MORNING COFFE
AWM-MAA ETTA Z. FALCONER LECTURE: Mathematical Interventions for Aneurysm Treatment by Dawn Lott
EARLE RAYMOND HEDRICK LECTURE: The Special Roles of Elliptic Curves by Manjul Bhargava
JAMES R. LEITZEL LECTURE: Just Walk Away, René: Cultural Issues in Broadening Participation in Mathematics by Philip Kutzko
MAA PRIZE SESSION
NAM BLACKWELL LECTURE: Using e-Mentoring to Prepare the Next Generation of Mathematics Teachers by Farrah Jackson Chandler
ALD
Bluegrass Ballroom
Heritage Ballroom 2 (LC)
INVITED PAPER SESSIO
Heritage Ballroom 3 (LC)
UNDERGRADUATE STUDENT ACTIVITY: Unshuffling for the Imperfect Mathemagician
Elkhorn A (LC)
CONTRIBUTED PAPER SESSION: Fostering, Supporting, and Propagating Math Circles for Students and Teachers, Session 2
CONTRIBUTED PAPER S
What I Wish I Knew the First (or S
I Taught Statistics
Elkhorn B (LC)
CONTRIBUTED PAPER SESSION: Geometry Topics That Engage Students, Session 1
CONTRIBUTED PAPER S
Students, Session 2
Elkhorn C (LC)
CONTRIBUTED PAPER SESSION: Novel Ways to Incorporate Writing into Mathematics Classes, Session 1
CONTRIBUTED PAPER S
Reasoning and Literacy: Pedagogi
Elkhorn D (LC)
CONTRIBUTED PAPER S
Session 1
Thoroughbred 1 (LC)
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INV
Thoroughbred 2 (LC)
MAA STUDENT PAPER SESSION #15
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Thoroughbred 3 (LC)
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Thoroughbred 8 (LC)
PI MU EPSILON STUDENT PAPER SESSION #6
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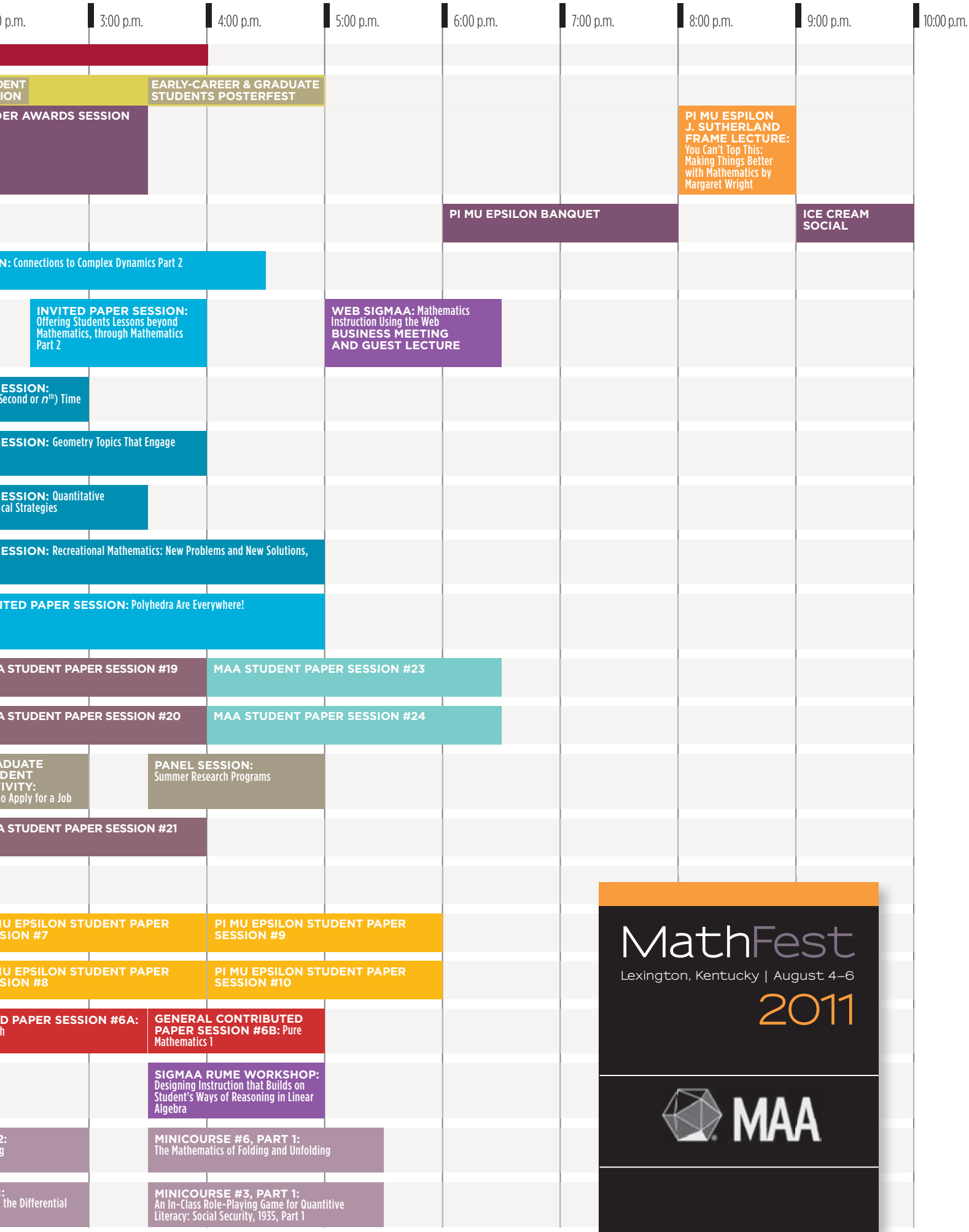
Berea Room (LC)
GENERAL CONTRIBUTED PAPER SESSION #5: Modeling and Applications
GENERAL CONTRIBUTE
Assessment, Mentoring & Outreac
Patterson A (Hyatt)
Woodford/Scott Suite (Hyatt)
MINICOURSE #2, PART 2
Alternatives to Traditional Gradin
to Enhance Student Learning
Jessamine/Franklin Suite (Hyatt)
MINICOURSE #1, PART 2
A Dynamical Systems Approach to
Equations Course
FRIDAY August 5, 2011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9:00 p.m.
10:00 p.m.
EARLY-CAREER & GRADUATE STUDENTS POSTERFEST
ER AWARDS SESSION
PI MU ESPILON J. SUTHERLAND FRAME LECTURE: You Can't Top This: Making Things Better with Mathematics by Margaret Wright
PI MU EPSILON BANQUET
ICE CREAM SOCIAL
N: Connections to Complex Dynamics Part 2
INVITED PAPER SESSION: Offering Students Lessons beyond Mathematics, through Mathematics Part 2
WEB SIGMAA: Mathematics Instruction Using the Web BUSINESS MEETING AND GUEST LECTURE
ESSION: Second or nth) Time
ESSION: Geometry Topics That Engage
ESSION: Quantitative cal Strategies
ESSION: Recreational Mathematics: New Problems and New Solutions,
ITED PAPER SESSION: Polyhedra Are Everywhere!
A STUDENT PAPER SESSION #19
MAA STUDENT PAPER SESSION #23
A STUDENT PAPER SESSION #20
MAA STUDENT PAPER SESSION #24
ADUATE DENT IVITY: o Apply for a Job
PANEL SESSION: Summer Research Programs
A STUDENT PAPER SESSION #21
U EPSILON STUDENT PAPER SION #7
PI MU EPSILON STUDENT PAPER SESSION #9
U EPSILON STUDENT PAPER SION #8
PI MU EPSILON STUDENT PAPER SESSION #10
D PAPER SESSION #6A: h
GENERAL CONTRIBUTED PAPER SESSION #6B: Pure Mathematics 1
SIGMAA RUME WORKSHOP: Designing Instruction that Builds on Student's Ways of Reasoning in Linear Algebra
2: g
MINICOURSE #6, PART 1: The Mathematics of Folding and Unfolding
: the Differential
MINICOURSE #3, PART 1: An In-Class Role-Playing Game for Quantitive Literacy: Social Security, 1935, Part 1
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Lexington, Kentucky | August 4–6
2011
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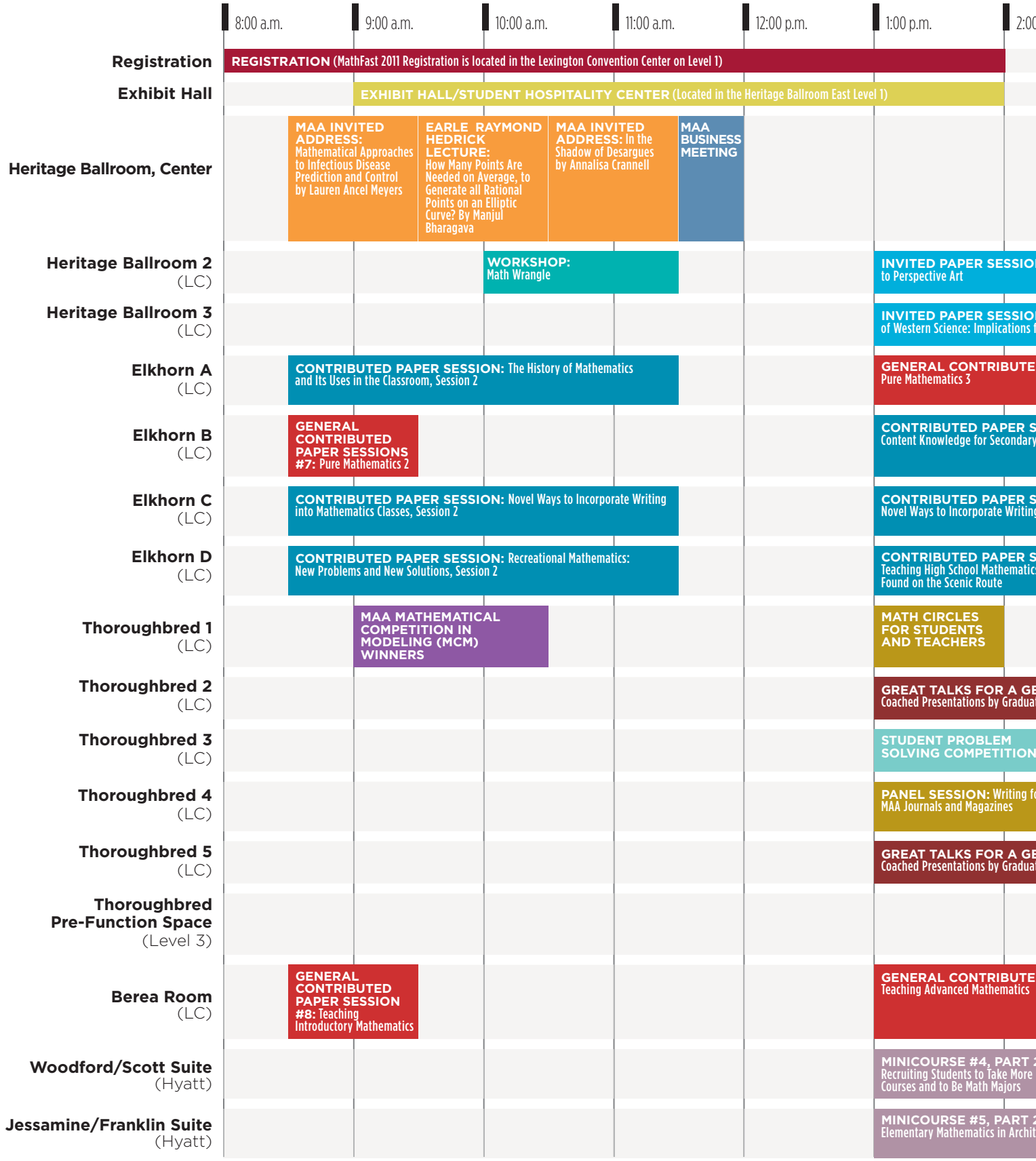
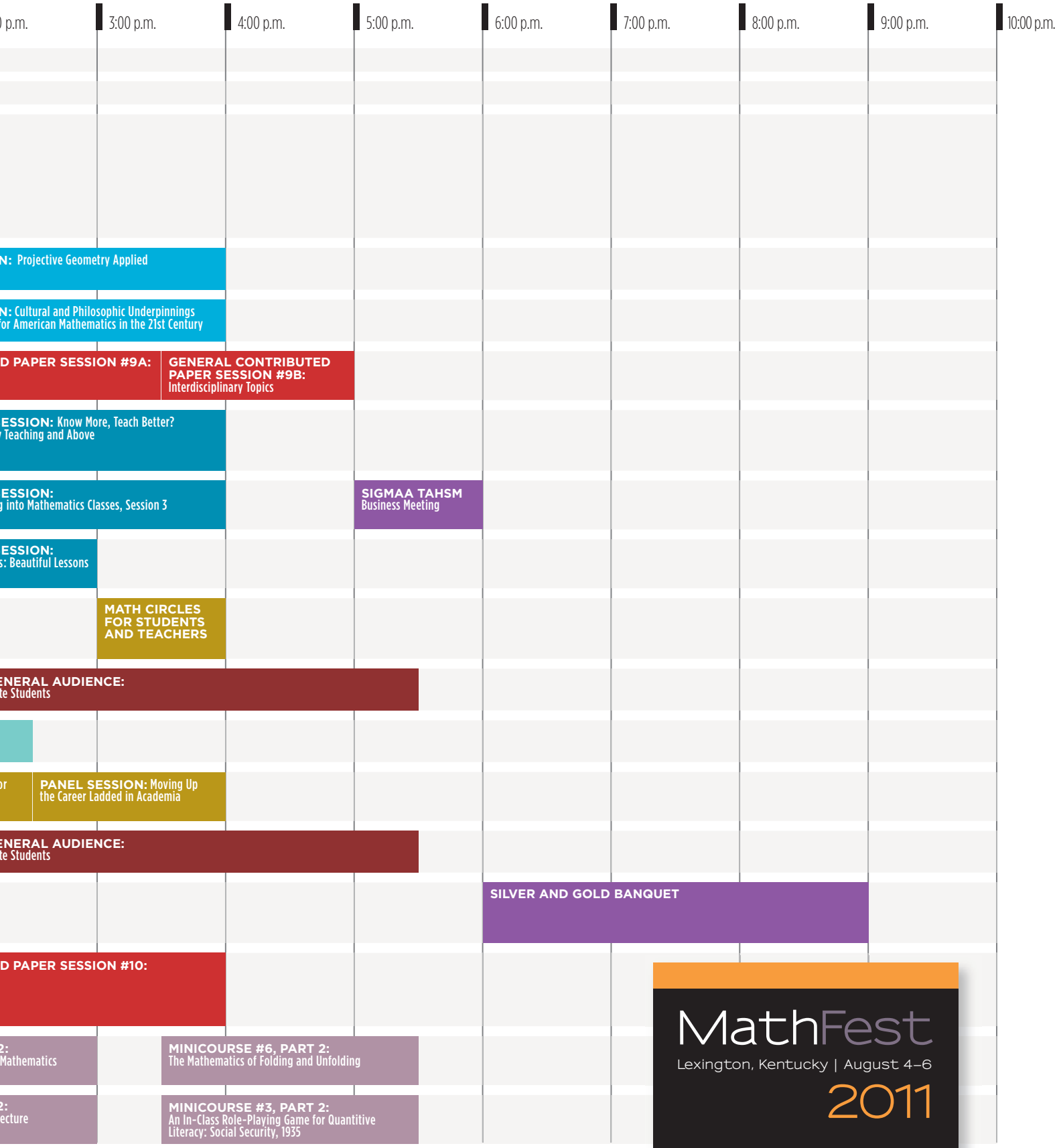
SATURDAY August 6, 2011





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Floor Plans

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WARMING KITCHEN
HBR 1
HBR 2
HBR 3
EMR-B
EMR-C
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BG BR 2
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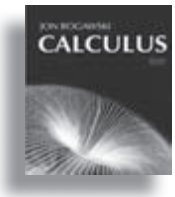

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CALCULUS
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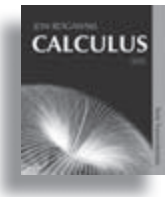

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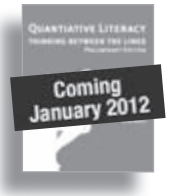

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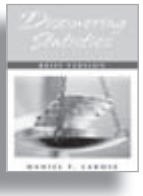
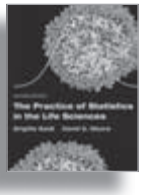


INTRODUCTORY STATISTICS:
A Problem Solving Approach
Stephen Kokoska

THE PRACTICE OF STATISTICS IN THE LIFE SCIENCES,
Second Edition
Brigitte Baldi | David S. Moore



THE PRACTICE OF STATISTICS FOR BUSINESS AND ECONOMICS, Third Edition
David S. Moore | George P. McCabe | Layth Alwan | Bruce Craig | William M. Duckworth III

TECHNOLOGY SOLUTIONS STOP BY BOOTH #38 FOR DEMOS

statsportal
STAT STATISTICS VIDEO TOOL KIT
CRUNCH IT!

Tuesday, August 2, 2011

9:00 a.m. - 5:00 p.m., Bluegrass Room Salon A, Hilton Hotel

Short Course

Trends in Mathematical Biology

Organizers: Holly Gaff and Jennifer Gallovich

Wednesday, August 3, 2011

8:00 a.m. - 7:00 p.m., Lexington Convention Center, Level 1

Registration

9:00 a.m. - 5:00 p.m., Bluegrass Room Salon A, Hilton Hotel

Short Course

Trends in Mathematical Biology

Organizers: Holly Gaff and Jennifer Gallovich

4:00 p.m. - 5:30 p.m., Thoroughbred 3, Convention Center, Level 3

Judging High School Contests

Presenter: Ben Fusaro

4:30 p.m. - 5:30 p.m., Thoroughbred 4

MAA-PME Student Reception

5:30 p.m. - 6:15 p.m., Thoroughbred 1, Convention Center, Level 3

Math Jeopardy

Organizers: Robert Vallin and Mike Berry

6:00 p.m. - 7:30 p.m., Lexington Convention Center, Level 1

Grand Opening and Reception

7:30 p.m. - 9:30 p.m., Grand Kentucky Ballroom, Hilton Hotel

Opening Banquet

MAA: *à e Musical!*

MC: Paul Zorn

Thursday, August 4, 2011

8:00 a.m. - 4:00 p.m., Lexington Convention Center, Level 1

Registration

8:30 a.m. - 9:20 a.m., Center Ballroom, Lexington Convention Center, Level 1

AMS- MAA Joint Invited Address

Polynomial Dynamics: Conjugacy and Combinatorics

Laura DeMarco, University of Illinois at Chicago

8:30 a.m. - 10:15 a.m., Elkhorn C

General Contributed Paper Session #1

History and Philosophy

Linda Becerra & Ron Barnes, University of Houston-Downtown

8:30 a.m. - 8:40 a.m.
Designing a New History of Mathematics Course
Julianna C. Stockton, Sacred Heart University

8:45 a.m. - 8:55 a.m.
A Mile Wide and an Inch Deep - 4000 BCE to 1950
Jeff Johannes, State University of New York, Geneseo

9:00 a.m. - 9:10 a.m.
History of Mathematics: An Exercise in Strengths
Mary B. Walkins, Lee University

9:15 a.m. - 9:25 a.m.
Key Contributors in the Evolving Role of Women in Mathematics
Linda Becerra, University of Houston-Downtown

9:30 a.m. - 9:40 a.m.
Ten Mathematicians Who Proclaimed the Greatness of God
Dale L. McIntyre, Grove City College

9:45 a.m. - 9:55 a.m.
The Mathematics of the Calendar
Doy Hollman, Lipscomb University

10:00 a.m. - 10:10 a.m.
Assessment Methods for Teaching the History of Mathematics Online
David Nacin, William Paterson University

8:30 a.m. - 10:15 a.m., Elkhorn D

General Contributed Paper Session #2

Teaching and Learning

Lynette Boos, Providence College

8:30 a.m. - 8:40 a.m.
Bringing Neuroscience into the Mathematics Classroom
Alexander Atwood, Suffolk County Community College

8:45 a.m. - 8:55 a.m.
Empowering Students through Peer Mentoring in Early College Mathematics Courses
Kathryn A. Brenneman, North Carolina State University

9:00 a.m. - 9:10 a.m.
Examining How Teachers' Mathematics Content Knowledge Explains Teaching Practice
Elizabeth Burroughs, Montana State University

9:15 a.m. - 9:25 a.m.
Excursions to and from Semantic Oblivion
David Easdown, University of Sydney

9:30 a.m. - 9:40 a.m.
Mastery Learning: Meeting the Developmental Math Needs of a Variety of Students
Sue R. Beck, Morehead State University

9:45 a.m. - 9:55 a.m.
Understanding Classroom Voting
Holly Zullo, Carroll College

10:00 a.m. - 10:10 a.m.
Social Choice in a Liberal-Arts Mathematics Course
Gregory Kelsey, University of Illinois at Urbana-Champaign

Thursday, August 4, 2011 (continued)

8:30 a.m. - 10:25 a.m., Thoroughbred 2
MAA Student Paper Session #1

8:30 a.m. - 10:25 a.m., Thoroughbred 3
MAA Student Paper Session #2

8:30 a.m. - 10:25 a.m., Thoroughbred 5
MAA Student Paper Session #3

8:30 a.m. - 10:25 a.m., Thoroughbred 6
MAA Student Paper Session #4

8:30 a.m. - 10:25 a.m., Thoroughbred 7
MAA Student Paper Session #5

8:30 a.m. - 10:30 a.m., Elkhorn A
Contributed Paper Session
Fostering, Supporting, and Propagating Math Circles for Students and Teachers
Session 1
Organizers: Tatiana Shubin, San Jose State University; and James Tanton, St. Mark's School

8:30 a.m. - 8:45 a.m.
The Beginnings of a Math Teachers' Circle
Debra Geddings, University of South Carolina
Douglas Meade, University of South Carolina

8:50 a.m. - 9:05 a.m.
Math Circles Along the Hudson River: From New York City to Albany
Japheth Wood, Bard College

9:10 a.m. - 9:25 a.m.
San Diego Math Circle: History, Structure, and Curriculum
David Patrick, Art of Problem Solving

9:30 a.m. - 9:45 a.m.
Math Teachers' Circles - A Descriptive Analysis of Final Evaluations from Summer Workshops
Diana White, University of Colorado, Denver

9:50 a.m. - 10:05 a.m.
AMS Epsilon: Funding for Summer Math Camps
Francis E. Su, Harvey Mudd College

10:10 a.m. - 10:25 a.m.
Always Be Prepared: Tips for Safe Outreach Programs
Brandy Wiegers, Mathematical Sciences Research Institute/San Francisco State University

8:30 a.m. - 10:10 a.m., Elkhorn B
Contributed Paper Session
Mathematical Modeling Projects That Matter
Session 1
Organizers: Mike Diehl, Endicott College; Matthew Pons, North Central College; and Katharine Ott, University of Kentucky

8:30 a.m. - 8:45 a.m.
Student Mathematical Modeling Projects with Interactive Excel Spreadsheets
Christopher Thron, Texas A&M University, Central Texas

8:50 a.m. - 9:05 a.m.
Modeling Loan Payments with Algebra and Spreadsheets
Eileen Fernandez, Montclair State University

9:10 a.m. - 9:25 a.m.
Mathematical Modeling for Pre-Service Middle School Teachers
Jerry Dwyer, Texas Tech University

9:30 a.m. - 9:45 a.m.
Modeling Cooperative Systems
David Arney, United States Military Academy

9:50 a.m. - 10:05 a.m.
Student Multimedia Projects Connect the Real World to Model Visualization in Multivariable Calculus
Lee Gibson, University of Louisville

8:30 a.m. - 10:30 a.m., Berea Room
General Contributed Paper Session #3
Applied Mathematics
Helmut Knaust, University of Texas at El Paso

8:30 a.m. - 8:40 a.m.
Convergence of an Immersed Finite Element Method for Semilinear Parabolic Interface Problems
Champike Attanayake, Miami University, Middletown

8:45 a.m. - 8:55 a.m.
Decomposition of a Complete Graph into Paths with no Subsystems
Venkata C. Dinavahi, The University of Findlay

9:00 a.m. - 9:10 a.m.
Derivation of the Kinetic Component of the Gluon Four Momentum Operator
Kevin Murphy, St. Norbert College

9:15 a.m. - 9:25 a.m.
Idempotent Algebra Solutions for Some Minimax Location Problems
Nikolai Krivulin, St. Petersburg State University

9:30 a.m. - 9:40 a.m.
Identification Problems for Nonlinear Hyperbolic PDEs, with Boundary Data
Narayan Thapa, Minot State University

9:45 a.m. - 9:55 a.m.
On the Computation of Multiweighted Shapley Values
Irinel Dragan, University of Texas

10:00 a.m. - 10:10 a.m.
Quantum Chromo/Electro-Dynamic Matrix Algebra and Its Geometric Dual
Wayne R. Lundberg, United States Air Force

10:15 a.m. - 10:25 a.m.
Sparse Signal Recovery Using Large-Scale Optimization
Roummel Marcia, University of California, Merced

9:00 a.m. - 5:00 p.m., Lexington Convention Center, Level 1
Exhibits

Thursday, August 4, 2011 (continued)

9:00 a.m. - 5:00 p.m., Lexington Convention Center, Level 1
Student Hospitality Center

9:30 a.m. - 10:20 a.m., Heritage Ballroom, Lexington Convention Center, Level 1
MAA Invited Address
Planting Your Roots in the Natural Numbers: A Rational and Irrational Look at 1,2,3,4, …
Edward Burger, Williams College

10:30 a.m. - 11:20 a.m., Heritage Ballroom, Lexington Convention Center, Level 1
Earle Raymond Hedrick Lecture
From Right-Angled Triangles to Algebraic Curves
Manjul Bhargava, Princeton University

1:00 p.m. - 1:50 p.m., Heritage Ballroom, Lexington Convention Center, Level 1
MAA Lecture for Students
Math Icons
Roger Nelsen, Lewis & Clark College

1:00 p.m. - 2:20 p.m., Thoroughbred 1
Panel Session
Assessing Mathematics Courses for Students in Business, Education, Engineering, and Nursing
Organizers: Bonnie Gold, Monmouth State University, and William Martin, North Dakota State University

Panelists: Bonnie Gold, Monmouth University; William O. Martin, North Dakota State University; Frank Raymond, Bellarmine University's W. Fielding Rubel School of Business; and Diane Orr Chlebowy, University of Louisville School of Nursing

1:00 p.m. - 2:20 p.m., Thoroughbred 4
Panel Session
Teaching Mathematics with the New Tablets: iPads, Slates, and Smartphones
Organizer: Lila Roberts, Clayton State University

Panelists: John Ehrke, Abilene Christian University; Doug Ensley, Shippensburg University; Barbara Kaskosz, University of Rhode Island; and Lila Roberts, Clayton State University

1:00 p.m. - 2:40 p.m., Elkhorn C
Contributed Paper Session
Trends in Undergraduate Mathematical Biology Education
Organizer: Timothy Comar, Benedictine University

1:00 p.m. - 1:15 p.m.
Preparing Students to Engage in Research Through a Biocalculus Course
Timothy D. Comar, Benedictine University

1:20 p.m. - 1:35 p.m.
An Undergraduate Algebra Curriculum Motivated by Recent Advances in Mathematical Biology
Rohan Attele, Chicago State University

1:40 p.m. - 1:55 p.m.
A Close-Knit Group at a Large Urban University - Long-Term Involvement in Undergraduate Research
Istvan Lauko, University of Wisconsin, Milwaukee

2:00 p.m. - 2:15 p.m.
Using Elementary Probability and Statistics to Understand the Florida Panther Population
Andrew Lazowski, Sacred Heart University

2:20 p.m. - 2:35 p.m.
Undergraduate Research Projects Focusing on the Comparison of Boolean and Continuous Dynamics of Gene Networks
Dan Hrozencik, Chicago State University

1:00 p.m. - 3:00 p.m., Hyatt Hotel Woodford/Scott Suites
Minicourse #2, Part 1
Alternatives to Traditional Grading to Enhance Student Learning
Presenters: Michael A. Brilleslyper and Beth Schaubroeck, U.S. Air Force Academy

1:00 p.m. - 3:00 p.m., Hyatt Hotel Jessamine/Franklin Suites
Minicourse #1, Part 1
A Dynamical Systems Approach to the Differential Equations Course
Presenter: Paul Blanchard, Boston University

1:00 p.m. - 4:30 p.m., Heritage 2
Invited Paper Session
Connections to Complex Dynamics
Organizers: Rodrigo Perez and Roland Roeder, Indiana University-Purdue University, Indianapolis

1:00 p.m. - 4:30 p.m.
Complex Dynamics in Two Variables: An Example
Jeffrey Diller, University of Notre Dame

1:45 p.m. - 2:15 p.m.
Lee-Yang-Fisher Zeros and Rational Dynamics
Roland Roder, Indiana University-Purdue University, Indianapolis

2:30 p.m. - 3:00 p.m.
Rock-Paper-Scissors in the Complex World
Joshua Bowman, SUNY Stony Brook

3:15 p.m. - 3:45 p.m.
Three-Dimensional Monomial Maps
Jan-Li Lin, Indiana University

4:00 p.m. - 4:30 p.m.
Checkerboard Julia Sets
Paul Blanchard, Boston University

1:00 p.m. - 4:00 p.m., Elkhorn B
Contributed Paper Session
Mathematical Modeling Projects That Matter
Session 2
Organizers: Mike Diehl, Endicott College; Matthew Pons, North Central College; and Katharine Ott, University of Kentucky

1:00 p.m. - 1:15 p.m.
Surviving an Outbreak of Zombiism: Mathematical Modeling Meets Pop Culture
Robert Allen, University of Wisconsin, La Crosse

Thursday, August 4, 2011 (continued)

1:20 p.m. - 1:35 p.m.
Expandable Combinatorial Lottery Modeling Projects
Melanie Pivarski, Roosevelt University

1:40 p.m. - 1:55 p.m.
From Modeling Projects to Original Research—An Undergraduate Course in Modeling
Gabriella Pinter, University of Wisconsin, Milwaukee

2:00 p.m. - 2:15 p.m.
Modeling a Diving Board
Michael A. Karls, Ball State University

2:20 p.m. - 2:35 p.m.
How Does the Size of Your Stomach Change During a Meal?
Mark I. Nelson, University of Wollongong

2:40 p.m. - 2:55 p.m.
Modeling Water Flow from a Clepsydra in Calculus II
Brian Hollenbeck, Emporia State University

3:00 p.m. - 3:15 p.m.
Interdisciplinary Connections: Applications of Differential Equations in Water Quality, Biomechanics, and Robotics
Kimberly Kendricks, Central State University

3:20 p.m. - 3:35 p.m.
Sparse Matrix Solution in Muscle Contraction Modeling
David Coulliette, Asbury University

3:40 p.m. - 3:55 p.m.
Thinking about Thinking: Projects with Neural Network Models
Melvin Royer, Indiana Wesleyan University

1:00 p.m. - 5:20 p.m., Elkhorn D

Contributed Paper Session

First-Year Seminar/First-Year Experience Mathematics Courses
Organizers: Jon L. Johnson, Elmhurst College; and Cheryl J. McAlister, Southeast Missouri State University

1:00 p.m. - 1:15 p.m.
A First-Year Seminar: What Is Mathematics and Why Won't It Go Away?
Susan Jane Colley, Oberlin College

1:20 p.m. - 1:35 p.m.
Engaging Students in Mathematical Conversations: From Book Clubs to Freshmen Seminars
Alessandra Pantano, University of California, Irvine

1:40 p.m. - 1:55 p.m.
Paul Erdos, Ramsey Theory, and the Question of Beauty in Mathematics
Peter F. Blanchard, University of Iowa

2:00 p.m. - 2:15 p.m.
A Learning Community Partnering Pre-Calculus with Introduction to STEM Degrees and Careers
Teri Murphy and Lisa Holden, Northern Kentucky University

2:20 p.m. - 2:35 p.m.
Calculating Truth, Beauty, Justice, and Fairness
R. Duane Skaggs, Morehead State University

2:40 p.m. - 2:55 p.m.
Culture, Science, and Mathematics in the Pre-Columbianamericas
Ximena Catepillan, Millersville University

3:00 p.m. - 3:15 p.m.
Great Mathematics Discoveries—Elucidated through Reading and Writing
Agnes M. Rash, Saint Joseph's University

3:20 p.m. - 3:35 p.m.
Mathematics Courses in the Montserrat Program at the College of the Holy Cross
John B. Little, College of the Holy Cross

3:40 p.m. - 3:55 p.m.
Two First-Year Seminar Course Designs for Science and Mathematics Majors
Helmut Knaust, The University of Texas at El Paso

4:00 p.m. - 4:15 p.m.
Numbers and Nativeamerican Mathematics
Jon L. Johnson, Elmhurst College

4:20 p.m. - 4:35 p.m.
Cryptology and Problem Solving with No Prerequisites
Keith E. Mellinger, University of Mary Washington

4:40 p.m. - 4:55 p.m.
Wheels and Deals: An FYS on Television Game Shows
Alison Marr, Southwestern University

5:00 p.m. - 5:15 p.m.
Extrapolating from a First-Year Experience for Mathematics Majors
Jacqueline M. Dewar, Suzanne Larson, and Thomas Zachariah, Loyola Marymount University

1:00 p.m. - 4:45 p.m., Berea Room

General Contributed Paper Session #4

Technology and Teaching
Jose Giraldo, Texas A&M University-Corpus Christi

1:00 p.m. - 1:10 p.m.
3 Online Homework Systems for Statistics Service Courses
Carol Vobach, University of Houston-Downtown

1:15 p.m. - 1:25 p.m.
Enhancing the Classroom Experience with Tablet PC Technology
Megan Sawyer, North Carolina State University

1:30 p.m. - 1:40 p.m.
Experimental Mathematics and Data Mining: Extracting Identities from the Online Encyclopedia of Integer Sequences
Hieu Nguyen, Rowan University

1:45 p.m. - 1:55 p.m.
A Flash Library for Ordinary Differential Equations
Luiz Martins, Cleveland State University

Thursday, August 4, 2011 (continued)

2:00 p.m. - 2:10 p.m.
Strategies for Using Computer Algebra Systems in Undergraduate Math Courses
Jerome Heaven, Indiana Tech

2:15 p.m. - 2:25 p.m.
Student Programming Projects to Create Pedagogically Effective Calculus Applets
Philip B. Yasskin, Texas A&M University

2:30 p.m. - 2:40 p.m.
The Microsoft Word Free Mathematics Add-In and Microsoft Mathematics Beta 4.0
Gail Nord, Gonzaga University

2:45 p.m. - 2:55 p.m.
Using Online Assessment Effectively in Large Courses
Lisa Townsley, University of Georgia

3:00 p.m. - 3:10 p.m.
Using Technology to Manage and Teach Developmental Online Mathematics Courses
Kendra Schroeder, Morehead State University

3:15 p.m. - 3:25 p.m.
Using Translations as a Tool to Broaden Effectiveness of Maplets for Calculus Applets
Douglas Meade, University of South Carolina

3:30 p.m. - 3:40 p.m.
A New Way to Teach Calculus - with Visualization, Technology, and Local Linearity
Jason Samuels, City University of New York

3:45 p.m. - 3:55 p.m.
Constructing Geometric Concepts with Real, Tangible Surfaces
Aaron Wangberg, Winona State University

4:00 p.m. - 4:10 p.m.
Homework Helpers in Multivariable Calculus
Susan Wildstrom, Walt Whitman High School

4:15 p.m. - 4:25 p.m.
Using M4C Maplets and Online Calculus at UALR
Denise LeGrand, University of Alabama, Little Rock

4:30 p.m. - 4:40 p.m.
WeBWorK Online Homework Problems with Embedded Flash Coming Soon to the National Problem Library
Barbara Margolius, Cleveland State University

2:00 p.m. - 3:20 p.m., Patterson Ballroom A, Hyatt Hotel
Graduate Student Workshop
What's the Story? A Graduate Student Workshop on Creating a Research Presentation for Undergraduates
Organizers: Aaron Luttman, Clarkson University; and Rachel Schwell, Central Connecticut State University

2:00 p.m. - 3:55 p.m., Thoroughbred 2
MAA Student Paper Session, #7

2:00 p.m. - 3:55 p.m., Thoroughbred 3
MAA Student Paper Session, #8

2:00 p.m. - 3:55 p.m., Thoroughbred 5
MAA Student Paper Session, #9

2:00 p.m. - 3:55 p.m., Thoroughbred 7
Pi Mu Epsilon Student Paper Session, #1

2:00 p.m. - 3:55 p.m., Thoroughbred 8
Pi Mu Epsilon Student Paper Session, #2

2:00 p.m. - 4:00 p.m., Heritage 3
Invited Paper Session
Offering Students Lessons Beyond Mathematics, through Mathematics
Edward Burger, Williams College

2:00 p.m. - 2:20 p.m.
Teaching Lessons That Last a Lifetime
Michael Starbird, The University of Texas at Austin

2:30 p.m. - 2:50 p.m.
An Entrepreneur's Appreciation of the Moore Method: How Lessons Learned from R. L. Moore's Classes Helped Me Succeed in Life and in Business
Harry Lucas Jr., The Educational Advancement Foundation

3:00 p.m. - 3:20 p.m.
Thinking, Writing, and Life-Long Learning
Deborah Bergstrand, Swarthmore College

3:30 p.m. Ð 3:50 p.m.
When Am I Ever Going to Use This? Developing the Life Skill of Thinking Mathematically
Lew Ludwig, Denison University

2:35 p.m. - 3:55 p.m., Thoroughbred 4
Panel Session
Assessing Quantitative Literacy
Organizer: Aaron Montgomery, Central Washington University

Panelists: Bernard Madison, University of Arkansas; Semra Kilic-Bahi, Colby-Sawyer College; and Donna Sundre, James Madison University

2:35 p.m. - 3:55 p.m., Thoroughbred 1
Panel Session
The Future of the Mathematics Major for Pre-Service Teachers
Organizers: Martha J. Siegel, Towson State University; and Kenneth C. Millett, University of California, Santa Barbara

Panelists: Elizabeth Burroughs, Montana State University; Bernard Madison, University of Arkansas; William McCallum, University of Arizona; and Dan Teague, North Carolina School of Mathematics and Science

3:30 p.m. - 5:00 p.m., Kentucky Ballroom D, Hilton Hotel
MAA Section Officers Meeting

Thursday, August 4, 2011 (continued)

3:30 p.m. - 5:30 p.m., Elkhorn A

Contributed Paper Session

The History of Mathematics and Its Uses in the Classroom, Session 1

Organizers: Joel Haack, University of Northern Iowa; Pamela L. Peters, University of Wisconsin, Platteville; Pam Crawford, Jacksonville University; and Ximena P. Catepillan, Millersville University of Pennsylvania

3:30 p.m. - 3:45 p.m.
An Early Approach to Finding Surfaces of Revolution
Andrew Leahy, Knox College

3:50 p.m. - 4:05 p.m.
Infinity—Past, Present, and Possible
Thomas Drucker, University of Wisconsin, Whitewater

4:10 p.m. - 4:25 p.m.
Modern Developments in Hilbert's Program—and Problem 6
Wayne R. Lundberg, Physicist

4:30 p.m. - 4:45 p.m.
Introducing Mathematical Philosophy in the Classroom
Nathan Moyer, Whitworth University

4:50 p.m. - 5:05 p.m.
The Ball of Cork: Using History in Calculus, Abstract Algebra, and Dynamical Systems
Ezra Brown, Virginia Polytechnic Institute and State University

5:10 p.m. - 5:25 p.m.
The Notion of Tree: Problems from the Past
Jerry Lodder, New Mexico State University

3:30 p.m. - 5:30 p.m., Hyatt Hotel Woodford/Scott Suites

Minicourse #4, Part 1

Recruiting Students to Take More Mathematics Courses and to Be Math Majors

Presenter: Michael Dorff, Brigham Young University

3:30 p.m. - 5:30 p.m., Hyatt Hotel Jessamine/Franklin Suites

Minicourse #5, Part 1

Elementary Mathematics in Architecture

Presenter: Alexander J. Hahn, University of Notre Dame

3:40 p.m. - 5:00 p.m., Patterson A Hyatt

SIGMAA RUME Workshop

Designing Instruction That Builds on Students' Ways of Reasoning in Linear Algebra

Environmental Mathematics

4:00 p.m. - 4:45 p.m., Thoroughbred 6
Guest Lecture

4:45 p.m. - 5:30 p.m.
Business Meeting

4:00 p.m. - 6:15 p.m., Thoroughbred 2

MAA Student Paper Session #11

4:00 p.m. - 6:15 p.m., Thoroughbred 3

MAA Student Paper Session #12

4:00 p.m. - 6:15 p.m., Thoroughbred 5

MAA Student Paper Session #13

4:00 p.m. - 6:15 p.m., Thoroughbred 7

Pi Mu Epsilon Student Paper Session #3

4:00 p.m. - 6:15 p.m., Thoroughbred 8

Pi Mu Epsilon Student Paper Session #4

4:10 p.m. - 5:30 p.m., Thoroughbred 4

Panel Session

Issues for Early-Career Mathematicians in Academia

Organizer: Doug Ensley

Panelists: Ed Aboufadel, Grand Valley State University; Rebecca Garcia, Sam Houston State University; and Francis Su, Harvey Mudd College

4:10 p.m. - 5:30 p.m., Thoroughbred 1

Panel Session

Undergraduate MathBio Programs Funded by NSF-UFM

Organizer: Maeve McCarthy, Murray State University
Panelists: K. Renee Fister, Murray State University; Jay Walton, Texas A&M University; and Janet Best, Ohio State University

4:30 p.m. - 5:30 p.m., Heritage 3

SIGMAA Math Circles for Students and Teachers Math Circles Demonstration

5:00 p.m. - 5:30 p.m., Elkhorn C

SIGMAA on Philosophy of Mathematics

Reception

5:30 p.m. - 6:30 p.m., Elkhorn C

SIGMAA on Philosophy of Mathematics

Guest Lecture:
Neil Tennant, Department of Philosophy, Ohio State University

5:30 p.m. - 6:30 p.m., Hyttops, Hyatt Hotel, Lower Level A

Graduate Student Reception

Organizers: Estela A. Gavosto University of Kansas; and James Freeman, Cornell College

6:00 p.m. - 11:00 p.m., Heritage 2

Backgammon Night

Conducted by Art Benjamin

6:00 p.m. **Backgammon Practice**
7:00 p.m. **Backgammon Mathematics Quiz**
Hosted by Art Benjamin and Jennifer Quinn
8:00 p.m. **Backgammon Tournament**

Friday August 5, 2011

8:00 a.m. - 4:00 p.m., Lexington Convention Center, Level 1
Registration

8:00 a.m. - 8:25 a.m., Center Ballroom, Convention Center, Level 1
AWM-MAA Morning Coffee

8:15 a.m. - 11:30 a.m., Berea Room
General Contributed Paper Session #5
Modeling and Applications
David Housman, Goshen College

8:15 a.m. - 8:25 a.m.
D-optimal Statistical Designs for MRI Experiments with Application to Nonlinear Models
Darcie Delzell, Wheaton College

8:30 a.m. - 8:40 a.m.
A Model for Psychiatric Patients Behaviors in Madonna University Teaching Hospital, Nigeria
Atabong T. Agendia, Madonna University, Nigeria

8:45 a.m. - 8:55 a.m.
A Quantitative Optimization Mathematical Model Analysis of Attributes Affecting Retention and Satisfaction Rates
Michael Miner, American Public University System

9:00 a.m. - 9:10 a.m.
A Special Quadratic Function Unifies Two Fundamental Quantities in Physics
Audey Shen, Henry M. Gunn High School

9:15 a.m. - 9:25 a.m.
Plane Geometry Modeling of Gravity Field Space Time Curves
Alexander L. Garron, Sand Box Geometry, LLC

9:30 a.m. - 9:40 a.m.
Applications of Matlab/CAS to Ecological Modeling
Leon Kaganovskiy, Touro College

9:45 a.m. - 9:55 a.m.
Mathematical Modeling of Obligate Mutualism Interactions: Leaf Cutter Ants and Fungus
Yun Kang, Arizona State University

10:00 a.m. - 10:10 a.m.
Mathematical Modeling with High-Speed Imagery
Michael C. Sostarecz, Monmouth College

10:15 a.m. - 10:25 a.m.
Queuing Model of Congested System Having Unknown Number of Servers, with Application to Highway Traffic
Mike Johnson, Meredith College

10:30 a.m. - 10:40 a.m.
Real World Applications of Mathematics
Darren Narayan, Rochester Institute of Technology; Joy Lind, University of Sioux Falls

10:45 a.m. - 10:55 a.m.
Settling Velocity and Sedimentation in Low Reynolds Number Fluid Systems
Terry Jo Leiterman, St. Norbert College

11:00 a.m. - 11:10 a.m.
Tweaking the NFL's Quarterback Passer Rating for Better Results
Paul von Dohlen, William Paterson University

8:30 a.m. - 9:20 a.m., Heritage Ballroom, Lexington Convention Center, Level 1
AWM-MAA Etta Z. Falconer Lecture
Mathematical Interventions for Aneurysm Treatment
Dawn Lott, Delaware State University

8:30 a.m. - 10:30 a.m., Elkhorn A
Contributed Paper Session
Fostering, Supporting, and Propagating Math Circles for Students and Teachers, Session 2
Organizers: Tatiana Shubin, San Jose State University; and James Tanton, St. Mark's School

8:30 a.m. - 8:45 a.m.
Central Nebraska Math Teachers' Circle and Sticky Note Mathematics
Pari Ford, University of Nebraska at Kearney

8:50 a.m. - 9:05 a.m.
Polynomial Interpolation (Newton) and Related Activities
Robert Sachs, George Mason University

9:10 a.m. - 9:25 a.m.
Geometric Combinatorics—a Treasure Trove of Math Circle Problems
Tatiana Shubin, San Jose State University

9:30 a.m. - 9:45 a.m.
Using Modified KenKen Puzzles in Math Circles
Harold Reiter, University of North Carolina, Charlotte

9:50 a.m. - 10:05 a.m.
Fibonacci Surprises
James Tanton, St. Mark's School

10:10 a.m. - 10:25 a.m.
Discussion

8:30 a.m. - 10:30 a.m., Elkhorn B
Contributed Paper Session
Geometry-Topics That Engage Students
Session 1
Organizer: Sarah Mabrouk, Framingham State University

8:30 a.m. - 8:45 a.m.
Engaging Explorations in Geometry using Excel
Deane E. Arganbright, Divine Word University (Papua New Guinea)

8:50 a.m. - 9:05 a.m.
Using GeoGebra to Improve Understanding of Proofs in Geometry
William Schellhorn, Simpson College

Friday, August 5, 2011 (continued)

9:10 a.m. - 9:25 a.m.
Voila! Proofs with Iteratively Inscribed Triangles
Christopher Thron, Texas A&M University, Central Texas

9:30 a.m. - 9:45 a.m.
Proofs That Explain: An Example
Margaret L. Morrow, State University of New York, Plattsburgh

9:50 a.m. - 10:05 a.m.
Visualizing Algebraic Surfaces
Ivona Grzegorczyk, California State University, Channel Islands

8:30 a.m. - 11:30 a.m., Elkhorn C
Contributed Paper Session
Novel Ways to Incorporate Writing into Mathematics Classes
Session 1
Organizers: Ryan Stuffelbeam, Transylvania University; and Martin Montgomery, Sam Houston State University

8:30 a.m. - 8:45 a.m.
Assigning a Mathematical Book Review in a Capstone Course
Maritza Branker, Niagara University

8:50 a.m. - 9:05 a.m.
Expository Papers: Windows into the World of Mathematics
Thomas Q. Sibley, St. John's University

9:10 a.m. - 9:25 a.m.
Journals and Reading and Websites, Oh My!
Susan Wildstrom, Walt Whitman High School

9:30 a.m. - 9:45 a.m.
Mathematics and Me: Reflections on Liberal Arts Mathematics
Sarah L. Mabrouk, Framingham State University

9:50 a.m. - 10:05 a.m.
Personal, Expository, Critical, and Creative: Using Writing in Mathematics Courses
Benjamin J. Braun, University of Kentucky

10:10 a.m. - 10:25 a.m.
Reflecting and Connecting through Journals and Essays
Chris Oehrlein, Oklahoma City Community College

10:30 a.m. - 10:45 a.m.
Seeing the Unseen: A Metaphor for Mathematics
Mike Pinter, Belmont University

10:50 a.m. - 11:05 a.m.
Truth and Beauty: A Course in Mathematics in Literature
Marion D. Cohen, Arcadia University

11:10 a.m. - 11:25 a.m.
The Mathematics Correspondent
Linda McGuire, Muhlenberg College

8:30 a.m. - 11:45 a.m., Thoroughbred 2
MAA Student Paper Session #15

8:30 a.m. - 11:45 a.m., Thoroughbred 3
MAA Student Paper Session #16

8:30 a.m. - 11:45 a.m., Thoroughbred 5
MAA Student Paper Session #17

8:30 a.m. - 11:45 a.m., Thoroughbred 7
Pi Mu Epsilon Student Paper Session #5

8:30 a.m. - 11:45 a.m., Thoroughbred 8
Pi Mu Epsilon Student Paper Session #6

9:00 a.m. - 5:00 p.m., Lexington Convention Center, Level 1
Exhibits

9:00 a.m. - 5:00 p.m., Lexington Convention Center, Level 1
Student Hospitality Center

9:30 a.m. - 10:20 a.m., Heritage Ballroom, Lexington Convention Center, Level 1
Earle Raymond Hedrick Lecture
The Special Role of Elliptic Curves
Manjul Bhargava, Princeton University

10:30 a.m. - 11:20 a.m., Heritage Ballroom, Lexington Convention Center, Level 1
James R. Leitzel Lecture
Just Walk Away, René: Cultural Issues in Broadening Participation in Mathematics
Philip Kutzko, University of Iowa

11:30 a.m. - 12:00 p.m., Heritage Ballroom, Lexington Convention Center, Level 1
MAA Prize Session

1:00 p.m. - 1:50 p.m., Heritage Ballroom, Lexington Convention Center, Level 1
NAM David Blackwell Lecture
Using e-Mentoring to Prepare the Next Generation of Mathematics Teachers
Farrah Jackson Chandler, Elizabeth City State University

1:00 p.m. - 1:50 p.m., Heritage Ballroom 3
Undergraduate Student Activity
Unshuffling for the Imperfect Mathemagician
Doug Ensley, Shippensburg University

1:00 p.m. - 1:50 p.m., Thoroughbred 1
Undergraduate Student Activity
Polynomia Pasttimes
Dan Kalman, American University

1:00 p.m. - 2:30 p.m., Exhibit Hall, Lexington Convention Center
Poster Session
Celebrating AWM Student Chapters
Organizer: Maia Averett, Mills College

Friday, August 5, 2011 (continued)

1:00 p.m. - 3:00 p.m., Hyatt Hotel Jessamine/Franklin Suites

Minicourse #1, Part 2

A Dynamical Systems Approach to the Differential Equations Course
Presenter: Paul Blanchard, Boston University

1:00 p.m. - 3:00 p.m., Hyatt Hotel Woodford/Scott Suites

Minicourse #2, Part 2

Alternatives to Traditional Grading to Enhance Student Learning
Presenters: Michael A. Brilleslyper and Beth Schaubroeck, U.S. Air Force Academy

1:00 p.m. - 3:00 p.m., Elkhorn A

Contributed Paper Session

What I Wish I Knew the First (or Second or…n^{th}) Time I Taught Statistics
Organizers: Brian Gill, Seattle Pacific University; Nancy Boynton, SUNY Fredonia; and Michael Posner, Villanova University

1:00 p.m. - 1:15 p.m.
Uncertain about Uncertainty: Motivating Statistical Thinking in Introductory Statistics Courses
Talithia Williams, Harvey Mudd College

1:20 p.m. - 1:35 p.m.
Statistical Concepts in Everyday Language
Richard Cleary, Bentley University

1:40 p.m. - 1:55 p.m.
Better Graphs, Better Formulas, and a Little Technology—Making Statistics a More Unified Course
Jason Samuels, City University of New York

2:00 p.m. - 2:15 p.m.
Technology in Basic Statistics Class
Annela Kelly, Roger Williams University

2:20 p.m. - 2:35 p.m.
Helping Business Students Acclimate to the Statistics Classroom
Susan D'Agostino, Southern New Hampshire University

2:40 p.m. - 2:55 p.m.
Let $n = 1$: The First Time Teaching Statistics
Jason Price, Nichols College

1:00 p.m. - 4:30 p.m., Heritage 2

Invited Paper Session

Connections to Complex Dynamics, Part 2
Organizers: Rodrigo Perez and Roland Roeder, Indiana University-Purdue University, Indianapolis

1:00 p.m. - 1:30 p.m.
The Period p-Curve for Cubic Polynomials
Araceli Bonifant, University of Rhode Island

1:45 p.m. - 2:15 p.m.
A Brief but Historic Article of Siegel
Rodrigo Perez, Indiana University-Purdue University, Indianapolis

2:30 p.m. - 3:00 p.m.
Julia Sets of Rational Maps Converging to Filled Julia Sets of Quadratic Polynomials
Bob Devaney, Boston University

3:15 p.m. - 3:45 p.m.
Wandering Vertices and Condensity in Julia Sets
Clinton Curry, SUNY Stony Brook

4:00 p.m. - 4:30 p.m.
Algorithms for Finding the Julia Sets of Hénon Maps
Phil Mummert, Taylor University

1:00 p.m. - 3:20 p.m., Elkhorn C

Contributed Paper Session

Quantitative Reasoning and Literacy: Pedagogical Strategies
Organizer: Mike LeVan, Transylvania University

1:00 p.m. - 1:15 p.m.
Keeping Quantitative Reasoning Courses Fresh and Relevant to Contemporary Society
Stuart Boersma, Central Washington University; Caren Diefenderfer, Hollins University; Bernard Madison, University of Arkansas

1:20 p.m. - 1:35 p.m.
Using Rubrics for Assessment, Guiding Student Thinking, and Designing Course Materials for Quantitative Reasoning
Stuart Boersma, Central Washington University; Caren Diefenderfer, Hollins University; Bernard Madison, University of Arkansas

1:40 p.m. - 1:55 p.m.
Common Sense: A Ten-Year Plan for Quantitative Literacy
Maura Mast, University of Massachusetts, Boston

2:00 p.m. - 2:15 p.m.
The State of Quantitative Literacy at Small Colleges and Universities
Jodie Miller, Mary Baldwin College

2:20 p.m. - 2:35 p.m.
Quantitative Reasoning Taught across the Curriculum
Martha Ellen Waggoner, Simpson College

2:40 p.m. - 2:55 p.m.
Service Learning in a Quantitative Reasoning Course
Allison Henrich, Seattle University

3:00 p.m. - 3:15 p.m.
Ladders Don't Slide
Ben Galluzzo, Shippensburg University

1:00 p.m. - 3:30 p.m., Berea

General Contributed Paper Session #6A

Assessment, Mentoring, & Outreach
Stephen Davis, Davidson College

1:00 p.m. - 1:10 p.m.
A 200-Question, Campus-Wide Math Contest
Brian Heinold, Mount St. Mary's University

Friday, August 5, 2011 (continued)

1:15 p.m. - 1:25 p.m.
A Model for Creating a Professional Development Program to Mentor Women Graduate Students
Jenna Carpenter, Louisiana Tech University

1:30 p.m. - 1:40 p.m.
An In-House Placement Test: Challenges and Solutions
Elizabeth Mathai, Norwich University

1:45 p.m. - 1:55 p.m.
AP Calculus: Concepts, Computation, and Communication
Tara L. Smith, University of Cincinnati

2:00 p.m. - 2:10 p.m.
AP Calculus: Facts, Figures, and FAQs
Stephen Kokoska, Bloomsburg University

2:15 p.m. - 2:25 p.m.
Helping Teachers and Parents Increase Persistence of Minority Students, and All Students, in Mathematics
Senan Hayes, Western Connecticut State University

2:30 p.m. - 2:40 p.m.
Identifying Crucial Concepts and Skills for Success in College Algebra through Calculus
Marc Harper, University of California, Los Angeles; Alison Ahlgren, University of Illinois

2:45 p.m. - 2:55 p.m.
In-depth Look into National Research Experience for Undergraduates Programs (NREUP)
Gulden Karakok, University of Northern Colorado

3:00 p.m. - 3:10 p.m.
Math Chats: Engaging Students in Mathematics Outside the Classroom
Robin L. Anderson, Southwestern Illinois College

3:15 p.m. - 3:25 p.m.
Women Count, Everyone Counts
Elizabeth Yanik, Emporia State University

1:00 p.m. - 4:00 p.m., Elkhorn B

Contributed Paper Session

Geometry-Topics That Engage Students, Session 2
Organizer: Sarah Mabrouk, Framingham State University

1:00 p.m. - 1:15 p.m.
A Geometry Based Math/Art Course with a Studio Component
Judith Silver and Jonathan Cox, Marshall University

1:20 p.m. - 1:35 p.m.
Geometry in a Historical Frame
Ockle Johnson, Keene State College

1:40 p.m. - 1:55 p.m.
Analyzing Floor Plans: A Geometry Lab
Emma Smith Zbarsky, Wentworth Institute of Technology

2:00 p.m. - 2:15 p.m.
Symmetry and Shape: Geometry for Nonmajors
Penelope Dunham, Muhlenberg College

2:20 p.m. - 2:35 p.m.
Geometry via Modeling
Marian Anton, Centre College

2:40 p.m. - 2:55 p.m.
Using Arts and Crafts to Reinforce Geometric Concepts
Kristen Sellke, St. Mary's University of Minnesota

3:00 p.m. - 3:15 p.m.
Using Paper Folding to Explore Euclidean Geometry
Carroll G. Wells, Lipscomb University

3:20 p.m. - 3:35 p.m.
Kinesthetically Experiencing Geometry
Todd D. Oberg, Illinois College

3:40 p.m. - 3:55 p.m.
All Hands on Deck: In Praise of Toys
Thomas Q. Sibley, St. John's University

1:00 p.m. - 4:40 p.m., Elkhorn D

Contributed Paper Session

Recreational Mathematics: New Problems and New Solutions, Session 1
Organizers: Paul Coe and Kristen Schemmerhorn, Dominican University

1:00 p.m. - 1:15 p.m.
Utility Theory and Deal or No Deal
Michael A. Jones, Mathematical Reviews

1:20 p.m. - 1:35 p.m.
Come on Down! Mathematics Behind *& e Price Is Right*
Anthony DeLegge, Benedictine University

1:40 p.m. - 1:55 p.m.
Wicked: A Problem in Counting and Probability
David Strong, Pepperdine University

2:00 p.m. - 2:15 p.m.
Probability and Strategy in Farkle
Jeff Johannes, State University of New York, Geneseo

2:20 p.m. - 2:35 p.m.
Words Searched: The Math of BOGGLE Logic Puzzles
Jonathan Needleman, Le Moyne College

2:40 p.m. - 2:55 p.m.
Diagonal Tricks for KenKen Puzzles
Robert Vallin, Slippery Rock University

3:00 p.m. - 3:15 p.m.
Pro Prob. Problem: Expected Number of Wins vs. Expectation of Winning Two-in-a-Row
Andrew Martin, Kentucky State University

3:20 p.m. - 3:35 p.m.
The Ben-Hur Staircase Climb
Andrew Simoson, King College

Friday, August 5, 2011 (continued)

3:40 p.m. - 3:55 p.m.
Tracking Fugitives in the Hotel Yao: Organizational Schemes for Efficient Lookup
David J. Wildstrom, University of Louisville

4:00 p.m. - 4:15 p.m.
Think-Tac-Toe: When Are Puzzles Solvable?
Susa Stonedahl, Northwestern University; Forrest Stonedahl, Northwestern University

4:20 p.m. - 4:35 p.m.
Minimal Modified Slitherlink Puzzles
Hollie L. Buchanan, West Liberty University

2:00 p.m. - 3:20 p.m., Thoroughbred 4
Panel Session
How to Apply for a Job
Organizer: Estela A. Gavosto, University of Kansas
Panelists: Kim Roth, Juniata College; James Freeman, Cornell College; Estela Gavosto, University of Kansas; a faculty member from a community college to be determined; and a representative from the industry to be determined

2:00 p.m. - 3:55 p.m., Thoroughbred 2
MAA Student Paper Session #19

2:00 p.m. - 3:55 p.m., Thoroughbred 3
MAA Student Paper Session #20

2:00 p.m. - 3:55 p.m., Thoroughbred 5
MAA Student Paper Session #21

2:00 p.m. - 3:55 p.m., Thoroughbred 7
Pi Mu Epsilon Student Paper Session #7

2:00 p.m. - 3:55 p.m., Thoroughbred 8
Pi Mu Epsilon Student Paper Session #8

2:00 p.m. - 5:00 p.m., Thoroughbred 1
Invited Paper Session
Polyhedra Are Everywhere!
Organizer: Benjamin Braun

2:00 p.m. - 2:20 p.m.
Polyhedra in Number Theory: Integer Partitions from a Geometric Viewpoint
Matthias Beck, San Francisco State University

2:30 p.m. - 2:50 p.m.
Polyhedra in Optimization: Why Calculus Methods Fail to Really Integrate over a Polyhedron and How to Actually Do It!
Jesus De Loera, University of California, Davis

3:00 p.m. - 3:20 p.m.
Polyhedra in Math Education
Carl Lee, University of Kentucky

3:30 p.m. - 3:50 p.m.
Polyhedra in Geometric Combinatorics: The Characteristic Polynomial Strikes Again
Caroline Klivans, The University of Chicago

4:00 p.m. - 4:20 p.m.
Polyhedra in Compressed Sensing
Jeffrey Blanchard, Grinnell College and University of Edinburgh

4:30 p.m. - 4:50 p.m.
Polyhedra in Algebraic Combinatorics: An Eulerian Relation for the Semisuspension
Margaret Readdy, University of Kentucky and the Institute for Advanced Study

2:00 p.m. - 3:20 p.m., Heritage Ballroom, Lexington Convention Center, Level 1
Alder Awards Session
Count Me In!
Alissa S. Crans
Lessons Learned in Year One of Calculus Coordination
Sarah Eichhorn
Greater Than the Sum of Its Parts
Sam Vandervelde

2:30 p.m. - 4:00 p.m., Heritage 3
Invited Paper Session
Offering Students Lessons Beyond Mathematics, through Mathematics
Organizer: Edward Burger, Williams College

2:30 p.m. - 2:50 p.m.
Changing Instructor Perception of Mathematics and Its Role in the Intellectual Development of Liberal Arts Students
Christina Carter, Buffalo State College

3:00 p.m. - 3:20 p.m.
Where's the Magic?
"Card" Colm: Mulcahy, Spelman College

3:30 p.m. - 3:50 p.m.
The Nature of Mathematics: Projects from Inspired Students
Candice H. Dance, Onondaga Community College (SUNY)

3:30 p.m. - 5:00 p.m., Berea Room
General Contributed Paper Session #6B
Pure Mathematics 1
Stephen Davis, Davidson College

3:30 p.m. - 3:40 p.m.
Three Irrational Rabbits and Meditating Transcendentals
Charlie Smith, Park University

3:45 p.m. - 3:55 p.m.
Investigations of the Riemann Hypothesis
Donald L. Hitzl, Stanford University, Retired

Friday, August 5, 2011 (continued)

4:00 p.m. - 4:10 p.m.
Riemann Zeta Function and Integral Representations of Apery's Constant
Tilak de Alwis, Southeastern Louisiana University

4:15 p.m. - 4:25 p.m.
Variations on Euclid [*n*], the Product of the First *n* Primes Plus One
Jay L. Schiffman, Rowan University

4:30 p.m. - 4:40 p.m.
Galois Group Computations via Resolvents and Subfields
Chad Awtrey, Elon University

4:45 p.m. - 4:55 p.m.
Asymptotic Regions in Snell Geometries
Jack Mealy, Austin College

3:30 p.m. - 5:00 p.m., Exhibit Hall, Lexington Convention Center
Poster Session
Early-Career and Graduate Students PosterFest
Organizers: Ed Aboufadel, Grand Valley State University; Aaron Luttman, Clarkson University; and Bryant Mathews, Azusa Pacific University

3:30 p.m. - 5:30 p.m., Hyatt Hotel Jessamine/Franklin Suites
Minicourse #3, Part 1
An In-Class Role-Playing Game for Quantitative Literacy: Social Security, 1935
Presenters: John Curran and Andrew M. Ross, Eastern Michigan University

3:30 p.m. - 5:30 p.m., Hyatt Hotel Woodford/Scott Suites
Minicourse #6, Part 1
The Mathematics of Folding and Unfolding
Presenter: Joseph O'Rourke, Smith College

3:40 p.m. - 5:00 p.m., Thoroughbred 4
Panel Session
Summer Research Programs
Organizers: William Hawkins Jr., MAA and University of the District of Columbia; and Robert Megginson, University of Michigan
Panelists: Anthony Tongen, James Madison University; and Dawit Haile, Virginia State University

3:40 p.m. - 5:00 p.m., Patterson Ballroom A, Hyatt Hotel
SIGMAA Rume Workshop
Designing Instruction That Builds on Students' Ways of Reasoning in Linear Algebra

4:00 p.m. - 6:15 p.m., Thoroughbred 3
MAA Student Paper Session #24

4:00 p.m. - 6:15 p.m., Thoroughbred 5
MAA Student Paper Session #25

4:00 p.m. - 6:15 p.m., Thoroughbred 7
Pi Mu Epsilon Student Papers #9

4:00 p.m. - 6:15 p.m., Thoroughbred 8
Pi Mu Epsilon Student Papers #10

5:00 p.m. - 6:30 p.m., Heritage 3
Web SIGMAA
Mathematics Instruction Using the Web
Business Meeting and Reception
Speaker: Andrew Bennett, Kansas State University
Touchable Math with HTML5

6:00 p.m. - 7:45 p.m., Bluegrass Ballroom
Pi Mu Epsilon Student Banquet and Awards Ceremony

8:00 p.m. - 8:50 p.m., Heritage Ballroom, Lexington Convention Center
Pi Mu Epsilon J. Sutherland Frame Lecture
You Can't Top This: Making Things Better with Mathematics
Margaret Wright, Courant Institute of Mathematical Sciences

9:00 p.m. - 10:00 p.m., Bluegrass Ballroom
MAA Ice Cream Social

Saturday, August 6, 2011

8:00 a.m. - 2:00 p.m., Lexington Convention Center, Level 1

Registration

8:30 a.m. - 9:20 a.m., Heritage Ballroom, Lexington Convention Center, Level 1

MAA Invited Address

Mathematical Approaches to Infectious Disease Prediction and Control
Lauren Ancel Meyers, University of Texas at Austin

8:30 a.m. - 11:30 a.m., Elkhorn A

Contributed Paper Session

The History of Mathematics and Its Uses in the Classroom, Session 2
Organizers: Joel Haack, University of Northern Iowa; Pamela L. Peters, University of Wisconsin at Platteville; Pam Crawford, Jacksonville University; Ximena P. Catepillan, Millersville University of Pennsylvania

8:30 a.m. - 8:45 a.m.
A Look at Five Interesting Triangles: Pascal, Chinese, Harmonic, Euler, and Prime
Jim Fulmer and Thomas McMillan, University of Arkansas at Little Rock

8:50 a.m. - 9:05 a.m.
Pedagogical Methods of Ancient Chinese Mathematics
Lisa D. Elliott, Austin Peay State University

9:10 a.m. - 9:25 a.m.
Bringing Historical Context to First-Year Mathematics Courses
Wojciech K. Kosek, Colorado Technical University

9:30 a.m. - 9:45 a.m.
Bringing Students into the Fold: Engagement through Mathematics History
Brian J. Lunday, United States Military Academy

9:50 a.m. - 10:05 a.m.
Cardano: A Minus Times a Minus Is Minus!?
Daniel J. Curtin, Northern Kentucky University

10:10 a.m. - 10:25 a.m.
Negative Numbers in School Mathematics
Patricia Baggett, New Mexico State University
Andrzej Ehrenfeucht, University of Colorado

10:30 a.m. - 10:45 a.m.
Historical Quotes in Finding the Meaning and Language of Limits
Barbara Shipman, University of Texas at Arlington

10:50 a.m. - 11:05 a.m.
Mathematics and the Arts: A Historical Perspective
Amy Osborne-Wheeler, Art Institute of Ohio

11:10 a.m. - 11:25 a.m.
Quadratures of Parabolas: Integrating Before Newton
Troy Goodsell, Brigham Young University-Idaho

8:30 a.m. - 11:30 a.m. , Elkhorn C

Contributed Paper Session

Novel Ways to Incorporate Writing Into Mathematics Classes, Session 2
Organizers: Ryan Stuffelbeam, Transylvania University; and Martin Montgomery, Sam Houston State University

8:30 a.m. - 8:45 a.m.
Do the Students Really Understand What They're Doing?
Jason Molitierno, Sacred Heart University

8:50 a.m. - 9:05 a.m.
Curriculum Crossroads: Where the Writer Meets the Mode
Irina A. Chernikova, Michael Johanyak, and Sheldon Wrice, The University of Akron

9:10 a.m. - 9:25 a.m.
Incorporating Writing into an Introductory Statistics Course Focused on Sports and Games
Joe DeMaio and Amy DeMaio, Kennesaw Sate University

9:30 a.m. - 9:45 a.m.
Instruction in Mathematical Communication through Problem-Solving Explanations
Dan Schultz-Ela, Mesa State College

9:50 a.m. - 10:05 a.m.
Laboratory-Based Writing Activities in an Engineering Statistics Course
Joshua Holden, Rose-Hulman Insitute of Technology

10:10 a.m. - 10:25 a.m.
Statistics in the World Around Us
Eric Ruggieri, Duquesne University

10:30 a.m. - 10:45 a.m.
Teaching Minitab by Student Memo Writing
Jacqueline Jensen, Sam Houston State University

10:50 a.m. - 11:05 a.m.
Using the *New York Times* in Statistics Class
Lanee Young, Fort Hays State University

11:10 a.m. - 11:25 a.m.
Writing Math from Intro Stat to Capstone
Therese Shelton, Southwestern University

8:30 a.m.- 10:30 a.m., Elkhorn B

General Contributed Paper Session #7

Pure Mathematics 2
Adam Coffman, Indiana University-Purdue University, Fort Wayne

8:30 a.m. - 8:40 a.m.
A Sequence Related to the Stern Sequence
Melissa Dennison, Baldwin-Wallace College

8:45 a.m. - 8:55 a.m.
Another Way to Obtain the Sheffer Type-0 Orthogonal Polynomial Sequences
Daniel J. Galiffa, Penn State Erie, The Behrend College

Saturday, August 6, 2011 (continued)

9:00 a.m. - 9:10 a.m.
Correct and Simple Proof That "Product of Even Transpositions Is Not Product of Odd Transpositions"
Peter Joyce, Community College of Baltimore County, Catonsville

9:15 a.m. - 9:25 a.m.
Equivalence of Discrete Morse Functions on Graphs
Nick Scoville, Ursinus College

9:30 a.m. - 9:40 a.m.
Frame Extensions
Papiya Bhattacharjee, Pennsylvania State University, Erie

9:45 a.m. - 9:55 a.m.
On a Golden Pair of Identities in the Theory of Numbers
Robert P. Schneider, University of Kentucky

10:00 a.m. - 10:10 a.m.
On Numbers That Can Be Expressed as the Sum of Two Positive Squares in Exactly *n* Distinct Ways
Jonathan Weisbrod, Rowan University

10:15 a.m. - 10:25 a.m.
Mobius Transformations and Ellipses
Adam Coffman, Indiana University-Purdue University, Fort Wayne

8:30 a.m.- 10:00 a.m., Berea Room

General Contributed Paper Session #8

Teaching Introductory Mathematics
Jose Giraldo, Texas A&M University-Corpus Christi

8:30 a.m. - 8:40 a.m.
College Algebra: Redesigned with Technology
Chris Schroeder, Morehead State University

8:45 a.m. - 8:55 a.m.
Engaging Students Using Instant Feedback Assessment ... Is it Better Than Winning the Lottery?
Susan Foege, Kentucky State University

9:00 a.m. - 9:10 a.m.
Introductory Problem-Solving Skills: An Alternative to Intermediate Algebra for Liberal Arts Majors
Jeffery D. Sykes, Ouachita Baptist University

9:15 a.m. - 9:25 a.m.
Mandatory Supplemental Instruction in Precalculus Courses
Gabriela Schwab, Emil Daniel Schwar, and Helmut Knaust, The University of Texas at El Paso

9:30 a.m. - 9:40 a.m.
Math Courses in the Science First-Year Learning Community at TAMUCC
Jose Giraldo, Texas A&M University, Corpus Christi

9:45 a.m. - 9:55 a.m.
Introducing Joint and Conditional Probability in an Introductory Business Statistics Course
Deborah J. Gougeon, University of Scranton

8:30 a.m.- 11:30 a.m., Elkhorn D

Contributed Paper Session

Recreational Mathematics: New Problems and New Solutions
Session 2
Organizers: Paul Coe and Kristen Schemmerhorn, Dominican University

8:30 a.m. - 8:45 a.m.
Centrosymmetric Solutions to the *N+k* Queens Problem
Richard D. Chatham, Morehead State University

8:50 a.m. - 9:05 a.m.
The Proof Is in the Pizza
Greg N. Frederickson, Purdue University

9:10 a.m. - 9:25 a.m.
When Two Worlds Collide
Pam Warton, The University of Findlay

9:30 a.m. - 9:45 a.m.
Fun Puzzles Using Modular Arithmetic
Shenglan Yuan, LaGuardia Community College, City University of New York

9:50 a.m. - 10:05 a.m.
Juggling Sequences and Restrictions
Jonathan Stadler, Capital University

10:10 a.m. - 10:25 a.m.
From Doodles to Induction: Recreational Research in Office Hours
Patrick Rault, State University of New York, Geneseo

10:30 a.m. 10:45 a.m.
Describing all Gibonacci Sequences, Modulo m
Marc Renault, Shippensburg University

10:50 a.m. - 11:05 a.m.
Exploring the Home Prime Conjecture in Bases Duodecimal and Hexadecimal
Jay L. Schiffman, Rowan University

11:10 a.m. - 11:25 a.m.
Weighted Magic Squares
Hossein Behforooz, Utica College

9:00 a.m.- 10:30 a.m., Thoroughbred 1

Undergraduate Student Activity

MAA Mathematical Competition in Modeling (MCM) Winners
Organizer: Ben Fusaro, Florida State University

9:00 a.m.- 2:00 p.m., Lexington Convention Center, Level 1

Exhibits

9:00 a.m.- 2:00 p.m., Lexington Convention Center, Level 1

Student Hospitality Center

Saturday, August 6, 2011 (continued)

9:30 a.m.- 10:20 a.m., Heritage Ballroom, Lexington Convention Center, Level 1

Earle Raymond Hedrick Lecture

How Many Points Are Needed on Average, to Generate all Rational Points on an Elliptic Curve?
Manjul Bhargava, Princeton University

10:00 a.m., Heritage 2

Workshop

Math Wrangle

10:30 a.m.- 11:20 a.m., Heritage Ballroom, Lexington Convention Center, Level 1

MAA Invited Address

In the Shadow of Desargues
Annalisa Crannell, Franklin & Marshall College

11:30 a.m.- 11:50 a.m., Heritage Ballroom, Lexington Convention Center, Level 1

MAA Business Meeting

1:00 p.m. - 2:00 p.m., Thoroughbred 1

Math Circles for Students and Teachers

Math Circles Demonstrations

1:00 p.m. - 2:15 p.m., Thoroughbred 3

Student Problem-Solving Competition

Organizer: Richard Neal, American Society for the Communication of Mathematics

1:00 p.m. - 2:20 p.m., Thoroughbred 4

Panel Session

Writing for MAA Journals and Magazines
Organizers: Ivars Peterson, Director of Publications and Communications, MAA; and Walter Stromquist, Editor, Mathematics Magazine

Panelists: Scott Chapman, American Mathematical Monthly,*(Sam Houston State University); Michael Henle,* College Mathematics Journal, *(Oberlin College); Tom Leathrum,* Loci, *(Jacksonville State University); Walter Stromquist,* Mathematics Magazine; *and Bruce Torrence,* Math Horizons *(Randolph Macon College)*

1:00 p.m. - 3:00 p.m., Hyatt Hotel Woodford/Scott Suites

Minicourse #4, Part 2

Recruiting Students to Take More Mathematics Courses and to Be Math Majors
Presenter: Michael Dorff, Brigham Young University

1:00 p.m. - 3:00 p.m., Hyatt Hotel Jessamine/Franklin Suites

Minicourse #5, Part 2

Elementary Mathematics in Architecture
Presenter: Alexander J. Hahn, University of Notre Dame

1:00 p.m. - 4:00 p.m., Heritage 2

Invited Paper Session

Projective Geometry Applied to Perspective Art
Organizers: Annalisa Crannell, Franklin & Marshall College; and Marc Frantz, Indiana University

1:00 p.m. - 1:20 p.m.
One-point, Two-point and Three-point Perspective Drawings and How to View Them
Don Row, University of Tasmania

1:30 p.m. - 1:50 p.m.
The Geometry of Visual Space
Dick Termes, Artist

2:00 p.m. - 2:20 p.m.
Scene Analysis
Talmadge James Reid, University of Mississippi

2:30 p.m. - 2:50 p.m.
Straightening Out Escher: Projective Geometry as a Gateway to Visual Hyperbolic Geometry
Norman J. Wildberger, University of New South Wales

3:00 p.m. - 3:20 p.m.
Modular Perspective vs. Traditional Methods
Tomás García-Salgado, UNAM Mexico

3:30 p.m. - 3:50 p.m.
The Most Underrated Theorem in Projective Geometry
Marc Frantz, Indiana University

1:00 p.m. - 4:00 p.m., Heritage 3

Invited Paper Session

Cultural and Philosophic Underpinnings of Western Science: Implications for American Mathematics in the 21st Century
Organizer: Philip Kutzko, University of Iowa

1:00 p.m. - 1:40 p.m.
Cultural Issues in Transitioning to Graduate School in Mathematics: A Personal Perspective
Paulette Willis, University of Houston

1:50 p.m. - 2:30 p.m.
Cultural Aspects of Finding and Keeping Graduate Students in the Mathematical Sciences
David Manderscheid, University of Nebraska

2:40 p.m. - 3:20 p.m.
The Outsider's Challenge in Learning Science: Culture and/or Orientation to Scientific Thinking and Practice
Douglas Mupasiri, University of Northern Iowa

3:30 p.m. - 4:10 p.m.
Transforming Undergraduates into Researchers: Best Practices from an Afrocentric Perspective
Edray Herber Goins, Purdue University

1:00 p.m. - 3:00 p.m., Elkhorn D

Contributed Paper Session

Teaching High School Mathematics: Beautiful Lessons Found on the Scenic Route
Organizer: Caren Diefenderfer, Hollins University

1:00 p.m. - 1:15 p.m.
Exploring Families of Curves
Daniel J. Teague, North Carolina School of Science and Mathematics

1:20 p.m. - 1:35 p.m.
Graphing Rational Functions and Solving Rational Inequalities Without a Calculator
Peter Joyce, Community College of Baltimore County, Catonsville

Saturday, August 6, 2011 (continued)

1:40 p.m. - 1:55 p.m.
Outdoors with Mathematics in the National Parks
Kristine Hoffman, West Platte R-II Jr./Sr. High School

2:00 p.m. - 2:15 p.m.
Proofs by Mathematical Induction for High School Students
Susan Wildstrom, Walt Whitman High School

2:20 p.m. - 2:35 p.m.
Size of *n*! (Stirling Approximation) in Calculus: Important, Useful, and Fun
Robert Sachs, George Mason University

2:40 p.m. - 2:55 p.m.
Using Explorations to Discover Derivatives
Susan Wildstrom, Walt Whitman High School

1:00 p.m. - 3:30 p.m., Elkhorn A

General Contributed Paper Session #9A

Pure Mathematics
David Housman, Goshen College

1:00 p.m. - 1:10 p.m.
A Brief Look at Graphs, Codes, and Schemes Obtained from Difference Sets
John Polhill, Bloomsburg University of Pennsylvania

1:15 p.m. - 1:25 p.m.
Counting Knot Mosaics
Rus May, Morehead State University

1:30 p.m. - 1:40 p.m.
Homological Generators and a Vanishing Conjecture
Joshua Roberts, Piedmont College

1:45 p.m. - 1:55 p.m.
Inverting a Class of Vast Matrices Using Their Anti-Transposes
Matt Hudelson, Washington State University

2:00 p.m. - 2:10 p.m.
On Infinite Subseries of the Harmonic Series
Andrew Martin, Kentucky State University

2:15 p.m. - 2:25 p.m.
The Number of Complex Roots of a Univariate Polynomial Inside a Rectangle
Jayantha L. Gan Hewage, University of Sri Jayewardenepura

2:30 p.m. - 2:40 p.m.
Existence of the Schubart Periodic Orbit with Arbitrary Masses
Duokui Yan, Chern Institute of Mathematics

2:45 p.m. - 2:55 p.m.
Some Geometric Aspects of the Finite Element Method for Elliptic PDEs
Benselamonyuy Ntatin, Austin Peay State University

1:00 p.m. - 3:40 p.m., Elkhorn B

Contributed Paper Session

Know More, Teach Better? Content Knowledge for Secondary Teaching and Above
Organizers: Cindy Traub, Vincent Kieftenbeld, and Adam Weyhaupt, Southern Illinois University, Edwardsville

1:00 p.m. - 1:15 p.m.
Number and Operation for Preservice Secondary Math Teachers
Diana White, University of Colorado, Denver

1:20 p.m. - 1:35 p.m.
Pre-college Mathematics from an Advanced Viewpoint
Elizabeth Bremigan, Ralph Bremigan, and John Lorch, Ball State University

1:40 p.m. - 1:55 p.m.
The Impact of K-12 Policy on 14-16+ Mathematics Education
Angela Bowzer, Westminster College
Angela Hodge, North Dakota State University

2:00 p.m. - 2:15 p.m.
An Abstract Algebra Class for Secondary Mathematics Teachers
Justin Hill and Christopher Thron, Texas A&M University-Central Texas

2:20 p.m. - 2:35 p.m.
Capstone as a Transition
Todd D. Oberg, Illinois College

2:40 p.m. - 2:55 p.m.
Blending Mathematical Content with Pedagogy in Upper-Level Mathematics Classes
Joyati Debnath, Winona State University

3:00 p.m. - 3:15 p.m.
Increasing Prospective Secondary Teachers' Content and Pedagogical Knowledge through Problem Solving
Jessica de la Cruz, Assumption College

3:20 p.m. - 3:35 p.m.
Teachers Analyzing Math in the Classroom: Using Video to Assess, Train, and Prepare Future Teachers
Taliesin Sutton, University of Arizona

1:00 p.m. - 4:00 p.m., Elkhorn C

Contributed Paper Session

Novel Ways to Incorporate Writing into Mathematics Classes
Session 3
Organizers: Ryan Stuffelbeam, Transylvania University; and Martin Montgomery, Sam Houston State University

1:00 p.m. - 1:15 p.m.
Combining Problem Solving and Writing in Single Variable Calculus Courses
Chad Awtrey, Elon University

Saturday, August 6, 2011 (continued)

1:20 p.m. - 1:35 p.m.
Using Two Phased Writing Projects and Rough Draft Meetings for Calculus Writing Projects
Teena Carroll, St. Norbert College

1:40 p.m. - 1:55 p.m.
Writing Projects for Calculus and Liberal Arts Mathematics
J. C. Tweddle, University of Evansville

2:00 p.m. - 2:15 p.m.
Students Writing for One Another on Course Wikis
Jennifer D. Wagner, Washburn University

2:20 p.m. - 2:35 p.m.
Using Wikis to Break the Language Barrier between Mathematics and Biology
Rebecca Vandiver, St. Olaf College

2:40 p.m. - 2:55 p.m.
Wiki Technology Supports Inquiry
Brian Katz, Augustana University
Elizabeth Katz, University of California, Santa Barbara

3:00 p.m. - 3:15 p.m.
Using Writing to Reveal Students' Thinking and Learning
Katie S. Quertermous, James Madison University

3:20 p.m. - 3:35 p.m.
What I Wish I Knew the First Time I Taught a Writing-Intensive Class
Yu-Ju Kuo, Indiana University of Pennsylvania

3:40 p.m. - 3:55 p.m.
Using Writing to Motivate General Education Math Students
Eric Aurand, Kaplan University;
Laurel Clifford, Mohave Community College

1:00 p.m. - 4:00 p.m., Berea Room

General Contributed Paper Session #10

Teaching Advanced Mathematics
Lynette Boos, Providence College

1:00 p.m. - 1:10 p.m.
Abel's Theorem Simplifies Reduction of Order
William R. Green, Eastern Illinois University

1:15 p.m. - 1:25 p.m.
An Explore-First, Lecture-Later-and-Little Approach to Teaching Introduction to Differential Equations
Chris Oehrlein, Oklahoma City Community College

1:30 p.m. - 1:40 p.m.
From Procedures to Proofs: Some Promising Ways for Undergraduates to Transition to Upper-Level Mathematics Courses
Kelly M. Bubp, Ohio University

1:45 p.m. - 1:55 p.m.
Geometric Interpretations of Complex Variables and Complex-Valued Functions
Hortensia Soto-Johnson, University of Northern Colorado

2:00 p.m. - 2:10 p.m.
Proof Journals
Leah Childers, Pittsburg State University

2:15 p.m. - 2:25 p.m.
Span, Basis, and Eigenvectors: Using Dynamically Connected Representations to Reify Abstract Concepts in Algebra
Douglas A. Lapp, Central Michigan University

2:30 p.m. - 2:40 p.m.
Strengthening the Teaching and Learning of "Function": Addressing the Classroom Challenges and Identifying Research Opportunities for Faculty
Donna Beers, Simmons College

2:45 p.m. - 2:55 p.m.
Teaching an Introduction to Mathematical Research Course for First-Year Students
Debra Czarneski, Simpson College

3:00 p.m. - 3:10 p.m.
The Induction-Recursion Parallel: An Example for Students
Keith Brandt, Rockhurst University

3:15 p.m. - 3:25 p.m.
Topics for Actuarial Exam P/1
Daniel Biles, Belmont University

3:30 p.m. - 3:40 p.m.
Using the JPEG Compression Algorithm in a First Linear Algebra Course
David Austin, Grand Valley State University

1:00 p.m. - 5:30 p.m., Thoroughbred 2 & Thoroughbred 5

Student Activity

Great Talks for a General Audience: Coached Presentations by Graduate Students
Organizers: Jim Freeman, Cornell College; and Rachel Schwell, Central Connecticut State University

Thoroughbred 2

1:00 p.m. - 1:10 p.m.,
Joint Introductory/Information Session

1:15 p.m. - 1:35 p.m.
Bubbles and Boundary: An Invitation to Isoperimetric Research
Donald Sampson

1:40 p.m. - 2:00 p.m.
Algebraic Coding and the Reed Solomon Code
Robert Edward Campbell

2:05 p.m. - 2:25 p.m.
Approximation by Rational Functions on Compact Nowhere Dense Sets in the Plane
Chris Mattingly

2:30 p.m. - 2:50 p.m.
Packing Complete Graphs with k-stars
Dan Roberts

Saturday, August 6, 2011 (continued)

2:55 p.m. - 3:15 p.m.
The Necessary Geometric Condition for the Solvability of the Inhomogeneous Cauchy Riemann Equation
Young Hwan You

3:20 p.m. - 3:40 p.m.
Unification and the Multiple Bubble Conjecture
Rebecca Dorff

3:45 p.m. - 4:05 p.m.
Using Computers to Solve Jigsaw Puzzles
Susan Crook

4:20- 5:30 p.m., Room A
Panel discussion/questions

Thoroughbred 5

1:15 p.m. - 1:35 p.m.
Markov Chains for Self-Assembly: How to Create Something out of (Almost) Nothing
Dana Randall, Amanda Pascoe Streib

1:40 p.m. - 2:00 p.m.
An Introduction to the Mandelbrot Set and Recent Related Results
Scott Kaschner

2:05 p.m. - 2:25 p.m.
Geometric Properties of Quasihyperbolic Distance
Poranee Khongkha Julian

2:30 p.m. - 2:50 p.m.
Lifting Commuting Involutions
Kathryn Brenneman

2:55 p.m. - 3:15 p.m.
Matrix Decompositions
Laura Dykes

3:20 p.m. - 3:40 p.m.
Parametric Toeplitz Operators
Mehdi Nikpour

3:45 p.m. - 4:05 p.m.
"The Complete Measurer": A Window into 19th Century Geometry
Kristina Leifeste

1:30 p.m. - 5:30 p.m.
Enviromental Mathematics Bus Trip
The Environment & Hydrology of the Lexington Area
Leader: Peter Idstein, Dept of Earth & Environ. Science, University of Kentucky

2:40 p.m. - 4:00 p.m., Thoroughbred 4
Panel Session
Moving Up the Career Ladder in Academia
Organizers: Maeve McCarthy, Murray State University; Jacqueline Jensen, Sam Houston State University; Rebecca Garcia, Sam Houston State University; Georgia Benkart, University of Wisconsin

Panelists: Dora Ahmadi, Morehead State University; Stephen Kennedy, Carleton College; and Maura Mast, University of Massachusetts, Boston

3:00 p.m. - 4:00 p.m., Thoroughbred 1
Math Circles for Students and Teachers
Math Circles Demonstrations

3:00 p.m. - 3:45 p.m., Elkhorn A
General Contributed Paper Session #9B
Interdisciplinary Topics
Ryan Rahrig, Bowling Green State University

3:00 p.m. - 3:10 p.m.
Creating a Real Music with Mathematical Ideas
Duk-Hyung Lee, Asbury University

3:15 p.m. - 3:25 p.m.
Things to Do with a Broken Stick
Gabriel Prajitura, State University of New York Brockport

3:30 p.m. - 3:40 p.m.
A Graph Theory Approach to an RNA Problem
Ryan Rahrig, Ohio Northern University

3:30 p.m. - 5:30 p.m., Hyatt Hotel Jessamine/Franklin Suites
Minicourse #3, Part 2
An In-Class Role-Playing Game for Quantitative Literacy: Social Security, 1935
Presenters: John Curran and Andrew M. Ross, Eastern Michigan University

3:30 p.m. - 5:30 p.m., Hyatt Hotel Woodford/Scott Suites
Minicourse #6, Part 2
The Mathematics of Folding and Unfolding
Presenter: Joseph O'Rourke, Smith College

5:00 p.m. - 6:00 p.m., Elkhorn C
SIGMAA Teaching Advanced High School Mathematics (TAHSM)
Business Meeting

6:00 p.m. - 9:00 p.m., Thoroughbred Prefunction Space, Level 3
Silver and Gold Banquet
MC: Wade Ellis, West Valley Community College
After Dinner Speaker: Joseph Gallian

Social Events

MAA-PME Student Reception

Wednesday, August 3, 4:30 p.m. Ð 5:30 p.m.

Math Jeopardy

Wednesday, August 3, 5:30 p.m. - 6:15 p.m.

Robert Vallin, Slippery Rock University; Michael Berry, University of Tennessee

Answer: A fun undergraduate mathematics contest to lead off MathFest.

Question: What is Math Jeopardy?

Four teams of students will provide the questions to go with the mathematical answers in many categories. Come cheer for your favorite team. à e session will be emceed by Michael Berry.

Opening Reception

Wednesday, August 3, 6:00 p.m. Ð 7:30 p.m.

à e association is pleased to hold a reception with cash bar for all MathFest participants immediately preceding the Opening Banquet. à is event will serve as the Grand Opening of the MathFest Exhibit Hall located in the Lexington Convention Center in the Heritage East Ballroom, 1st Floor.

Opening Banquet

Wednesday, August 3, 7:30 p.m. Ð 9:30 p.m.

MC: Paul Zorn, MAA President

After dinner: *MAA: The Musical!* Alissa Crans, Annalisa Crannell, Art Benjamin, Bud Brown (musical director), Dan Kalman, David Bressoud, Francis Su, Frank Farris, Jennifer Beineke, Jenny Quinn, Matthew DeLong, Norm Richert, Paul Zorn, Talithia Williams, and other members of the MAA Players.

Written and directed by Annalisa Crannell, with lyrics by cast members and by Larry Lesser.

Graduate Student Reception

Thursday, August 4, 5:30 p.m. Ð 6:30 p.m.

Estela A. Gavosto, University of Kansas; James Freeman, Cornell College

Graduate students are invited for some refreshments and to meet several of the invited speakers.

Backgammon Night

Thursday, August 4, 6:00 p.m. Ð 11:00 p.m.

Art Benjamin

6:00 p.m. Backgammon Practice Session, conducted by Art Benjamin.

Learn how to play backgammon, including how to use the doubling cube and strategies for tournaments. Play some practice games and have fun. Students welcome!

7:00 p.m. Backgammon Mathematics Quiz, hosted by Art Benjamin and Jennifer Quinn.

Win big prize money for being able to answer mathematical questions, based on the game of backgammon. Aside from knowing the rules of the game, no prior backgammon playing experience is assumed.

8:00 p.m. Backgammon Tournament

Up to $1,000 in cash prizes offered. No entry fee! Limited to 64 players. Sponsored by the U.S. Backgammon Federation. Participants who preregister on the website **usbgf.org** are eligible for additional prizes. Participants can register on-site between 6:00 and 7:45 p.m. Students are especially welcome to play.

AWM-MAA Morning Coffee

Friday, August 5, 8:00 a.m. Ð 8:25 a.m.

à e Association for Women in Mathematics and the Mathematical Association of America invite you to enjoy coffee and light refreshments before the Etta Z. Falconer Lecture.

Pi Mu Epsilon Student Banquet and Awards Ceremony

Friday, August 5, 6:00 p.m. Ð 7:45 p.m.

MAA Ice Cream Social and Undergraduate Awards Ceremony

Friday, August 5, 9:00 p.m. Ð 10:00 p.m.

We will recognize all students who gave talks in the MAA Student Paper Sessions and award prizes for the best of them. All undergraduate students are invited to attend.

Silver & Gold Banquet

Saturday, August 6, 6:00 p.m. Ð 9:00 p.m.

MC: Wade Ellis, West Valley Community College

Speaker: Joseph Gallian, University of Minnesota Duluth

"The Making of the 2003 and 2010 Math Awareness Month Posters"

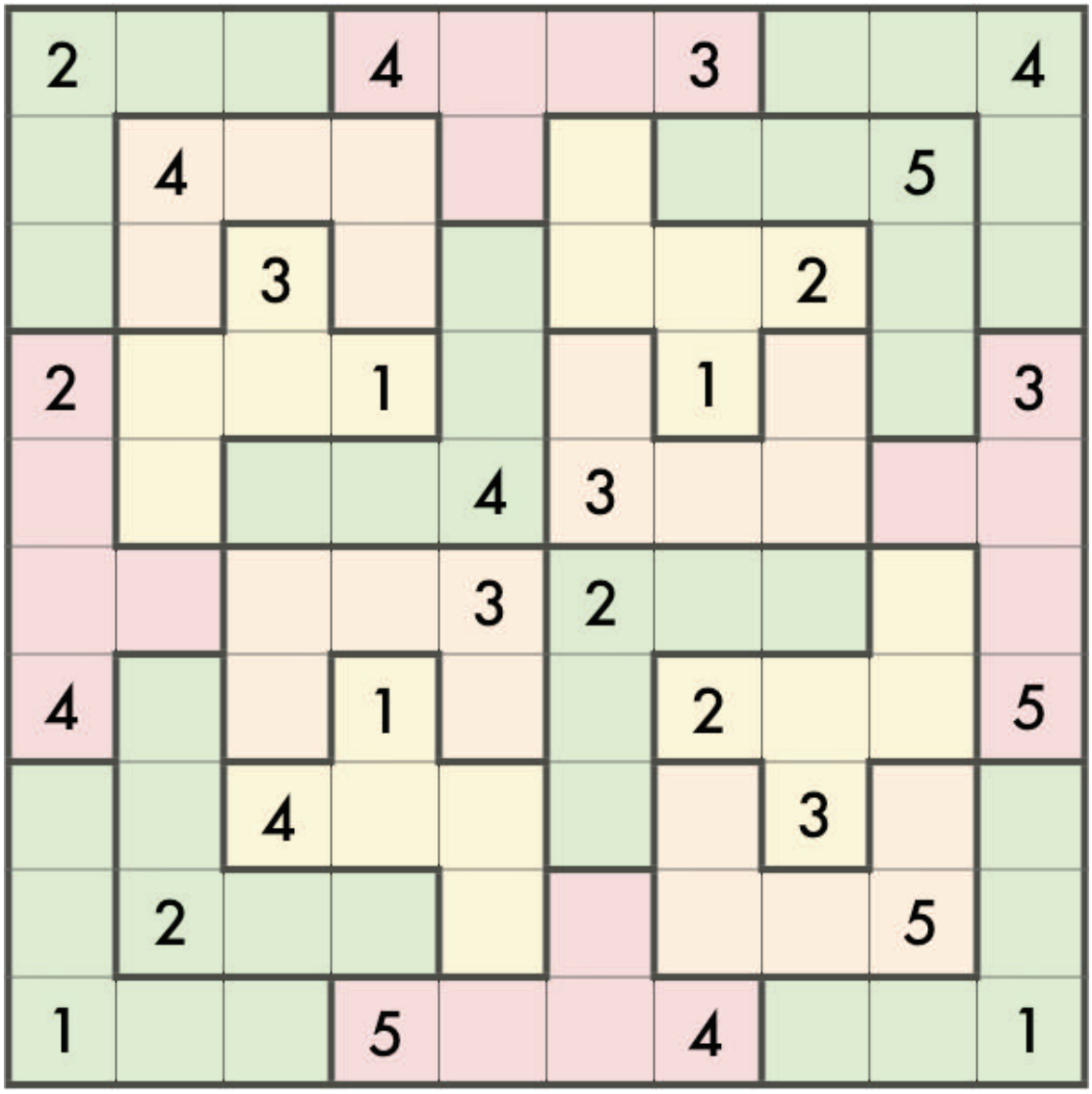
In this talk I discuss the how Mathematics Awareness Month has been observed over the years. Particular attention will be paid to how the selection of themes for Mathematics Awareness Month 2003 and 2010 were made and how the images were created.

Pentominoku

SATURDAY'S "PROBLEM OF THE DAY"

Rules:

Fill in the grid so that each pentomino shape contains 1–5 exactly once, and each row and column contains 1–5 exactly TWICE.



Thanks to Brainfreeze Puzzles (brainfreezepuzzles.com) for providing this year's MathFest Sudoku. This year's puzzle will appear in a new book, *Taking Sudoku Seriously*, by Laura Taalman and Jason Rosenhouse, to be published in 2011 by Oxford University Press.

Thank You

MathFest Sponsors

The Mathematical Association of America would like to thank our 2011 Sponsors for so generously contributing to the success of MathFest.

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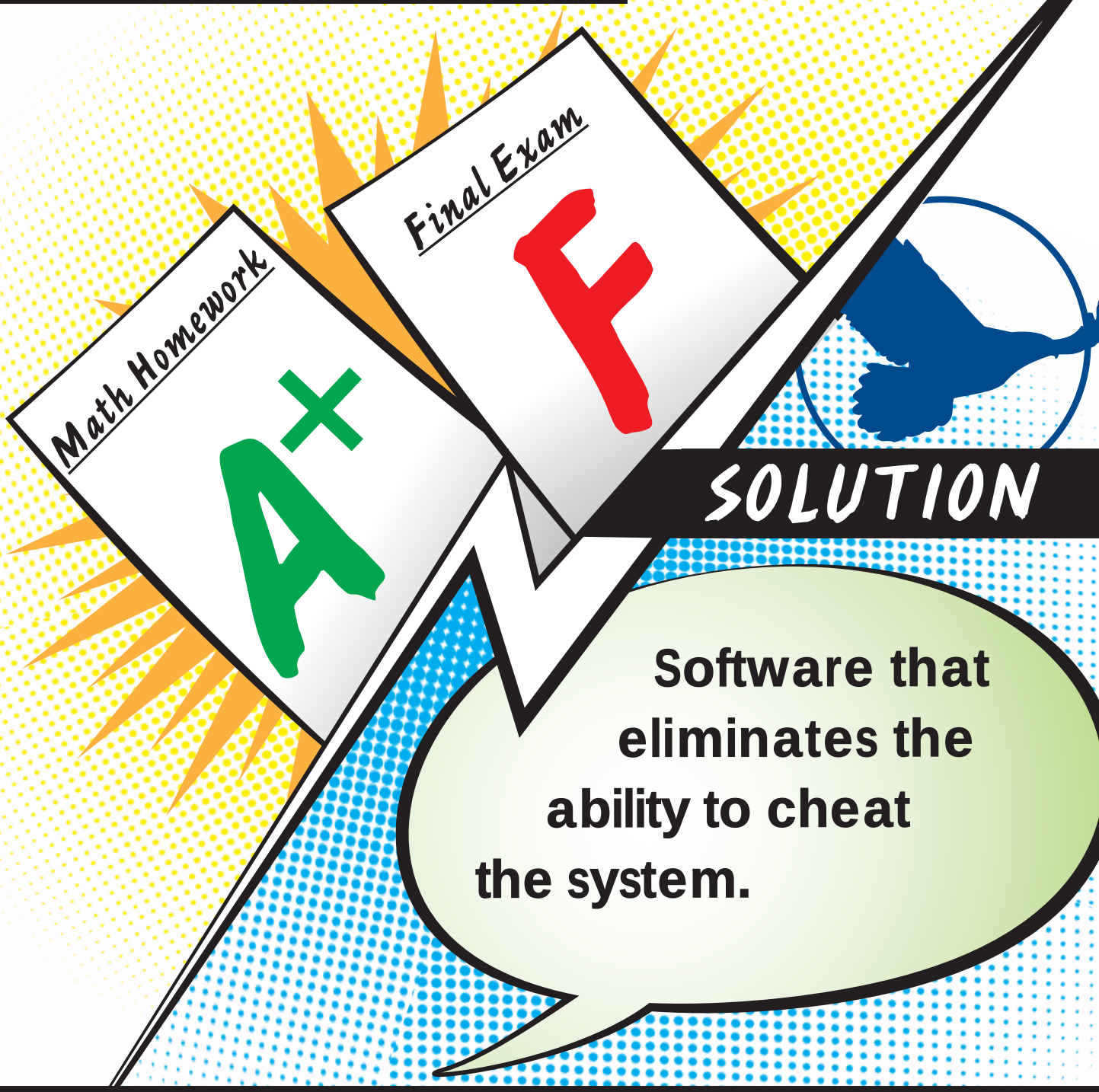

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Software that eliminates the ability to cheat the system.

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