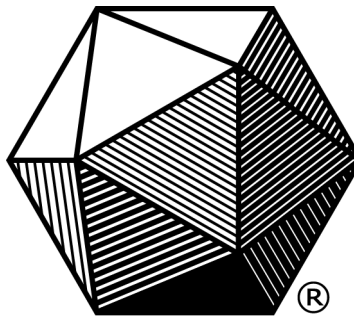


The Mathematical Association of America



Wisconsin Section Newsletter Spring 2008

Governor's Report

I participated in my last Board of Governors meeting at the Joint Meetings in San Diego, CA in January 2008. It has been a pleasure to serve as the Governor of the Wisconsin Section, and it is hard to believe how fast those three years have gone by. I plan to continue my involvement in the MAA at the national level as I am a member of two committees and am a member of the Strategic Planning Working Group on Sections. As I have mentioned before the MAA is currently undergoing a multi-year strategic planning exercise. Cycle III (Meetings, Sections, and STEM-related issues in Mathematics) has begun. In December, I attended the first meeting of my working group at the Carriage House at MAA headquarters in Washington, DC. I recommend that you stop by the MAA if you are ever in DC. The facilities are absolutely beautiful. To support further programming at the Carriage House, Virginia Halmos offered a 2-1 match if the MAA could raise 300,000 in two years. President Joe Gallian did so in six weeks, and Mrs. Halmos was so impressed, she offered another \$200,000 for a 1-1 match. So it looks like the Carriage House programming will soon be funded through a \$1,300,000 endowed fund!

The January 2008 issue of MAA FOCUS has beautiful pictures on page 3 of the "River of Bricks" at the Carriage House. Bricks cost \$303 apiece. I would like the Wisconsin Section to consider buying a brick. Also, this is a wonderful way for departments to honor retiring faculty.

Much of the Governor's Meeting was spent on previous strategic planning groups reporting. The group on governance presented its final report along with a number of recommendations about the committee structure of the MAA. It was decided that once all three cycles are completed a working group will look at all nine reports and examine the relationships between the many recommendations. More information can be found at the MAA website – www.maa.org.

The "Found Math" photos section of the MAA on-line web site has become incredibly popular. If you haven't done so take a look at the webpage at www.maa.org/FoundMath/FMgallery08.html. In addition, the MAA website is much more dynamic than ever. It's worth a daily visit.

Finally, remember that MathFest is in Madison this summer (July 31 – August 2). I certainly hope we have a strong Wisconsin presence. I hope to see many of you there and at the section meeting at MATC in April.

John Koker, Section Governor

Contest Report

American Mathematics Competitions

The AMC 8 competition was held on November 13, 2007. A total of 1976 Wisconsin students participated in the competition (down from 2107). There was one perfect score from Wisconsin, by Laura Xu of Jefferson Middle School in Madison. The average score for Wisconsin students was 9.08, compared with the national average score of 9.87. This gap has been narrowing for several consecutive years.

The AMC 10 and 12 contests will be held on February 12 and 27, 2008. Data will be reported at the Spring Meeting.

MAA-Wisconsin Section High School Contest Examination

The Section contest examination was given on Thursday, December 2008. Of the 88 schools who ordered the exam, only 81 reported their scores, for a total of 3,464 students. This continues the downward trend, as last year there were 85 schools reporting 4,085 scores. The exam was much more difficult this year than last year, and writers will aim for middle ground with next year's contest. The cutoff for the top 1% was a score of 83 out of 120 and there were no perfect scores this year.

Dr. Laura Schmidt has continued to head UW-Stout's efforts in running the competition. There was some discussion about changing the prize from a book to a gift certificate. Feeling that a gift certificate was too impersonal for this achievement, the decision was made to continue with a book as a prize. Many thanks to the UW-Stout faculty for coordinating these efforts.

Respectfully submitted, Kristen Lampe, Carroll College

Chair's Report

The 76th Annual Meeting of the MAA/Wisconsin Section will be held at the Madison Area Technical College, April 25-26, 2008. Chair-Elect Andrew Matchett (UW-La Crosse), in collaboration with Site-Coordinator Jeganathan Sriskandarajah (MATC), has planned an exciting program for April 25 and 26. Invited speakers will include Colin Adams (Williams College), Arthur Benjamin (Harvey Mudd College), and Richard Cleary (Bentley College). The meeting also will include the popular mathematics game show, "Face Off" for college students. Thanks to our coordinators of student activities, Ken Price and Steve Szydlak of UW-Oshkosh, for planning and running the show. The preliminary program appears in this Newsletter. I hope you all attend, and encourage your students to attend and perhaps present a paper as well. Student registration is free and a student banquet ticket is only \$5. All student speakers will receive a one-year complimentary MAA membership.

The nominee for chair-elect is Robert Wilson of UW-Madison, and you can find a short biography in this newsletter. The election is held at the business meeting, so please attend to take part in this and other important decisions that need to be made.

John Koker's term as governor of our section will expire July 1, 2008. David Scott (Ripon College), and Jonathan Kane (UW-Whitewater) are the candidates for the next governor for a three-year term. The election is underway and will end March 12, 2008. We encourage you to vote if you have not done so.

It was wonderful to see so many of you in San Diego in January. There were a number of items of interest at the Section Officer's Meeting. Betty Mayfield, chair of the MAA Strategic Planning Working Group on Meetings, mentioned that her group concentrates on two or three topics in small groups annually. This year's topic was about MAA members and students participation in national meetings. The focus group to which I was assigned discussed the following questions:

- Why do you go to national meetings?
- Are there members in your Section who go to Section meetings but not to national meetings?
- Do you or your colleagues view JMM and MathFest differently?
- What do you think of the proportion of 'real math' at MathFest or the Joint Meetings? Should there be more?
- Are there things you do at your Section meetings that you think could work well at a national meeting?
- What could we do to make MathFest/JMM more attractive to the faculty who do not currently attend?

Our Section's Executive Committee at its January 25, 2008 meeting has decided to distribute a survey containing these questions at the Section Meeting in Madison. The survey will be available at the registration desk. Please share your thoughts on these matters by completing the survey. Your input is very much appreciated.

Finally, it has been a privilege and an honor to serve as your Chair and to have worked with you this year. Also I am very fortunate to work with the section executive committee. Let us also thank Jeganathan Sriskandarajah for his three years of dedicated service on the Executive Committee. We have had an excellent representative of the section under outgoing Governor John Koker who has done a superb job. Thanks John for your valuable contributions.

See you all in Madison.

Mohammad H. Ahmadi, Chair

Elections for Governor

Elections for Governor of the Wisconsin Section of the MAA are being conducted by the national office. MAA members should have received a paper ballot with voting instructions. The candidates are David Scott of Ripon College and Jonathan Kane of UW-Whitewater. If you have any questions, you should contact skennedy@maa.org, or call 800-741-9415.

Project NExT-Wisconsin

At the spring meeting of MAA Wisconsin section, Project NExT-WI will have lunch followed by a panel discussion on Saturday April 26, 2008. The topic will be “Grading without Tears: Assessment Strategies that Work.” How to assess the student learning is one of the topics which most of end up talking about whenever we have a chance to sit with our colleagues. Part of the debate then is “Assessment Strategies”. Having this panel discussion will help the fellows to learn about what others and learn from their experiences.

Project NExT-WI also holds annual Fall Workshop (during last week of September or first week of October) in Menomonie, WI which is open to all current NExT-WI members. Further details are posted in time on the Project NExT-WI website (<http://www.uwplatt.edu/nextwi/>) along with updates to all the NExT-WI members.

Currently we have 27 active members in Project NExT-WI and we are always looking for new members. There is no deadline to apply for the membership. One can apply any time during the academic year.

Project NExT-Wisconsin is open to all full-time faculty members in mathematics departments in the Wisconsin Section who are within their first four years of undergraduate teaching. You may also be eligible if you have more teaching experience, but are new to the Wisconsin Section. To apply, contact me at ulhaqi@uwplatt.edu.

Respectfully, Irfan Ul-Haq Director, Project NExT-Wisconsin

Student Activities

The co-Coordinators, Ken Price and Steve Szydlik, are pleased to report on opportunities for Wisconsin’s undergraduate math students. We especially look forward to this year’s section meeting at Madison Area Technical College (MATC) on April 25-26. Please let students know they can receive a complimentary membership in the MAA by simply giving a talk at this meeting. The banquet cost for students will be held to \$5 per ticket. We will try to find low-cost housing options for students who wish to stay for both days. Thanks to the hard work of the organizers of the 2007 meeting, we were able to offer a student retreat room at UW-Eau Claire, and plan to do so again.

We are particularly grateful for all of the past support and interest in the fast-paced math game show “Face Off!” It will return to the MAA section meeting. Students who have taken Calc I or above are eligible to compete for their department in teams of 2-4 players. Contact Ken (pricek@uwosh.edu) or Steve (szydliks@uwosh.edu), or check the web site at http://www.uwosh.edu/faculty_staff/szydliks/faceoff.htm for details.

“Face Off!” was a part of MATC’s sixth annual Math Fest (organized by MAA-Wisconsin past chair, J. “Sri” Sriskandarajah), and part of the twenty-second annual Pi Mu Epsilon Regional Undergraduate Math Conference (organized by Rick Poss at St. Norbert College). John Beam (UW-Oshkosh) took a turn as host at MATC, while John Koker, our MAA-Wisconsin governor, hosted the version at St. Norbert College. Our secretary-treasurer, Mark Snavelly, helped out with the scoring at the PME meeting. We’re always looking for new categories, good questions, sources for inexpensive prizes, new venues, and other game support, so please contact us if you have ideas or want to help out.

The Wisconsin Mathematics Council’s Annual Green Lake Conference is scheduled for May 1-2, 2008. Anyone interested in any level of mathematics education in Wisconsin is encouraged to attend.

We look forward to student participation in state events and hope you encourage some of your students to attend conferences and to give presentations. Please let us know if you have ideas of ways to make the section more student-friendly. We’re always looking for suggestions!

Respectfully submitted by Ken Price and Steve Szydlik, UW-Oshkosh

Nominee for Chair-Elect

Robert (Bob) Wilson, UW-Madison

Bob Wilson is Professor of Mathematics at UW-Madison. He has worked both in academia (at Washington and Lee University as well as at UW) and in Silicon Valley industry, where he managed and performed computer system development and also managed and performed government-sponsored research into computer security, computer networking, and artificial intelligence, and as a private consultant to industry. He got his BA from Ohio Wesleyan University and his MA and PhD (1969) from UW-Madison, where he stayed for six more years on the faculty before going out to see the world in 1975. He returned to UW-Madison in 1990.

At UW-Madison, Bob has supervised the distance education programs in math and science as well as being a regular member of the math department. Although his original training and PhD research was in pure mathematics (specifically non-associative algebra), his publications, presentations, and consulting work have covered many areas. He has been an invited participant in MAA sponsored national programs planning where mathematics education ought to be going. He has been an award winning teacher at the college level and also is active in programs for K-12 teachers.

While he tries to keep up with some of what is happening in non-associative algebra and certain kinds of combinatorics, his present research is in mathematics education. He would love to be able to decide even what the question is for which the answer is "the culture a student comes from". It is widely cited that in Japan if you ask someone what it takes to do well in mathematics, the answer is "hard work", but in the US the answer is "a special gift" or something equivalent. Is this related to how US students compare to others in international comparisons?

Directions to Madison Area Technical College

MATC's Truax Campus is located at 3550 Anderson St., near the junction of Hwy. 151 (E. Washington Ave.) and Hwy. 51 (Stoughton Rd.).

From I-90/94, you have your choice of three exits

- Take Exit 132 (Hwy. 51/Stoughton Rd.) south. Turn right on Anderson St. MATC will be on your right.
- At Exit 135A (Hwy. 151/E. Washington Ave.), follow the sign marked 151 South/Madison; turn right on Hwy. 51 (Stoughton Rd.) and left on Anderson St.
- At Exit 138 (Hwy. 30), take Hwy. 30. Follow the sign marked 30 West/Madison; turn right on Hwy. 51 (Stoughton Rd.) and left on Anderson St.

From Hwy 12/18: Exit at Hwy. 51 and go north. One block after crossing Hwy. 151 (E. Washington Ave.), turn left on Anderson Street.

Or visit: <http://matcmadison.edu/matc/campuses/madison/> for the map.

Lodging Information

Lodging is plentiful in the Madison area. If you choose to stay at the nearby Holiday Inn (www.holidayinn.com/madisonwi, 5109 W. Terrace Dr., Madison, WI 53718; 608-249-4220) or the equally nearby Staybridge Suites (www.staybridgesuites.com/sbmadisonwi, 3301 City View Drive, Madison, WI 53718; 608-241-2300), ask for the special MAA meeting rate which is \$89 for a spacious double room and includes a nice breakfast. For 3-5 people, suites cost \$99. These two hotels are each approximately four miles from MATC. They also have a free shuttle to the campus and to the airport.

Parking

Between noon April 25 and noon April 26, participants can park in any of the student parking areas on campus. No permit is necessary.

REGISTRATION FORM

MAA Wisconsin Section Spring Meeting

Madison Area Technical College

April 25-26, 2008

Preregistration Deadline: **April 16, 2008**

Registration				Banquet			
No.	Type	Price*	Total \$	No.	Type	Price**	Total \$
	MAA Member	\$20			Regular	\$20	
	Retired MAA Member	\$10			Student	\$5	
	K-12 Teacher	\$10		Please indicate any dietary restrictions (vegetarian, kosher, etc.):			
	Student	FREE					
	Other	\$22		Commemorative T-Shirt			
Registration Total:				No.	Size	Price	Total \$
Banquet Total:					Medium	\$8	
T-Shirt Total:					Large	\$8	
Amount Enclosed					X-Large	\$8	

*Registration at the meeting will be \$25 for all except students, who will still be free.

**Regular banquet tickets will be \$25 after the pre-registration deadline of April 16. Student banquet tickets remain \$5.

For MAA Records, please indicate the highest degree awarded by your institution:

☐ Ph.D. ☐ Master's ☐ Bachelor's ☐ Associate ☐ Not Applicable

NAME(S) _____

ADDRESS _____

MAKE CHECKS PAYABLE TO: MAA - WISCONSIN SECTION

PLEASE SUBMIT TO:

Mark Snively, Treasurer
Mathematics Department
Carthage College
Kenosha, WI 53140

(262) 551-5714
snively@carthage.edu

CALL FOR SPEAKERS

76th Annual Meeting of MAA/Wisconsin Section, April 25 – 26, 2008

Madison Area Technical College

The Wisconsin Section of the MAA will hold its 2008 Spring Meeting at MATC-Madison on April 25-26, 2008. Please consider giving a talk about your work in mathematics, an issue concerned with mathematics education, or pedagogy of mathematics. Please encourage your mathematics students to attend the meeting and to give a presentation. There is a student speaker form below.

If you wish to present a talk at the Spring Meeting, please send the information below to:

Andrew Matchett, Mathematics Department, UW-La Crosse, La Crosse, WI 54601

Phone: (608)785-8391

FAX: (608)785-6602

email: matchett.andr@uwlax.edu

An on-line version of this form is available at: <http://www.uwplatt.edu/maawisc/speaker.html>

Electronic submission of the information and abstract is preferred.

SPEAKER RESPONSE FORM – DUE: March 16, 2008

Name: _____

Position: _____

Institution: _____

Address: _____

Phone: _____ Email: _____

Title of talk: _____

Length of talk: 25 minutes _____ or 50 minutes _____

Abstract: _____

Check here if your talk is appropriate for students: _____

Equipment needed: _____

Time preference: Friday afternoon is Imperative _____ Preferred _____

Saturday morning is Imperative _____ Preferred _____

Either time is acceptable _____

CALL FOR STUDENT SPEAKERS

Student Mathematics Conference

Madison Area Technical College April 25 – 26, 2008

The Wisconsin Section of the MAA encourages undergraduate students who have done research in mathematics to give a 25-minute presentation about their work at the Spring Meeting. Each student speaker receives free registration at the meeting and free one year MAA membership. If you wish to present a talk, please send the completed form below or an email equivalent by March 16, 2008 to:

Andrew Matchett, Mathematics Department, UW-La Crosse, La Crosse, WI 54601

Phone: (608)785-8391

FAX: (608)785-6602

email: matchett.andr@uwlax.edu

An on-line version of this form is available at: <http://www.uwplatt.edu/maawisc/student.html>

Electronic submission of the information and abstract is preferred.

STUDENT SPEAKER RESPONSE FORM – DUE: MARCH 16, 2008

Name: _____ Year in School _____

Institution: _____

Address: _____ Phone: _____

_____ Email: _____

Faculty Sponsor: _____

Title of presentation: _____

Brief description of presentation _____

Equipment needed: _____

Time preference: Friday afternoon is Imperative ____ Preferred ____

Saturday morning is Imperative ____ Preferred ____

Either time is acceptable _____

76th Annual Meeting of the MAA/Wisconsin Section

April 25-26, 2008

Madison Area Technical College

PRELIMINARY SCHEDULE

* Denotes talk appropriate for students.

Friday, April 25, 2008

Noon – 5 pm Registration

Noon – 5 pm Exhibits, MAA Book Sale

1:00 – 1:25* Stephen Szydluk (UW-Oshkosh)

The Problem with the "Junk Food Problem"

Using a matrix as a placeholder for the coefficients in a linear system is perhaps the most fundamental idea in linear algebra. This simple idea nevertheless leads to rich opportunities for data collection and analysis, critical thinking, and some surprisingly deep mathematics. In this talk, I will discuss some of the surprising challenges that can arise when solving a system of linear equations using real data. The context, calculating the number of calories in different types of foods, was a seemingly straightforward class activity for the author that evolved into a deeper exploration of issues in numerical analysis, including error analysis and stability in linear systems.

1:00 – 1:25 R. Michael Howe (UW-Eau Claire)

The Excellence in Mathematics and Computer Science Scholarship program at UW-Eau Claire

In 2002 UW-Eau Claire received a \$400,000 grant from the National Science Foundation to fund scholarships for talented students majoring in Mathematics and Computer Science who also have financial need. I will discuss some features and results of the program.

1:00 – 1:25* Alex Lavrentiev (UW-Fox)

The Greatest Integer Function Problems

The greatest integer function is usually introduced in a College Algebra course as an example of a piecewise defined function, but often there are very few textbook problems designed to make students explore the properties of this particular function.

In this talk I will present a range of problems, from very basic to rather challenging, that involve the greatest integer function and discuss some of its properties.

1:00 – 1:55 Pam Peters (UW-Platteville)

Gaussian Maps for Double Covers of Smooth Toric Surfaces

Defining smooth toric surfaces and in particular Hirzebruch surfaces using a four vector fan, I will explore the Gaussian map.

Using surjectivity of multiplication maps on Hirzebruch surfaces, I'll discuss Gaussian maps for double covers of Hirzebruch surfaces and their relationship with Gaussian maps on curves on these double covers.

1:30 – 1:55* Kirthi Premadasa (UW-Whitewater)

Making the Epsilon-Delta definition fun to learn

It is not a secret that the epsilon-delta definition in Mathematics is a concept that university students worldwide find the hardest to grasp. A group of academics at the University of Colombo Sri Lanka felt that if not for the Greek symbols, the definition would be the most natural definition that someone with a clear intuition about limits would eventually discover. With this belief, the group prepared a student centered lesson, carefully scripted with simple and fun activities to enable students to discover

the epsilon-delta definition through team working. The activity was also aimed at improving the communication and team working skills of students as well as to develop inter-personal communication among the students of the country's two main ethnic groups. We present the methods and outcomes of this study.

1:30 – 1:55* Roy Berg (Actuarial industry)

Niels Henrik Abel and the Abel Awards

A discussion of the work of Niels Henrik Abel and the Abel Awards, with an overview of the actuarial profession, time permitting.

1:30 – 1:55* Stan Russell (Pima Community College, Tucson, Az)

A Dynamically Embedded Growth Model

A nonlinear dynamic system $dx/dt=1-y$, $dy/dt=x-z$, $dz/dt=ryz\{\exp(-az)-bz\}$ is presented where x and y are environmental states interacting with population growth variable z .

Analysis reveals regions of instability where the environmental states begin to oscillate unboundedly as the population state undergoes intervals of wild intermittent behavior, leading ultimately to extinction.

The foregoing example is intended to motivate the following: We note that the exponential($dx/dt=rx$) and the logistic($dx/dt=rx(1-x)$) models, in spite of their simplicity, are important both mathematically as well as in application. However, they do not address the fact that nothing "really" endures (in time) without major changes if not actual extinction. What models can we identify which (i) address this fact, (ii) are relatively "simple", and (iii) exhibit "important" mathematical features?

2:00 – 2:25* Charlotte Chell (Carthage College)

Quantitative Literacy and Quantitative Reasoning: What are they and do they matter?

What do QL and QR mean? Is this the newest trend (fad?) in mathematics education? Is there really an issue at hand? We will investigate the scope of the topic, and give examples of what is happening across the country.

2:00 – 2:25* Bob Coffman (UW-River Falls)

More on Sylvester's Problem

Choose two points at random in a unit circle and draw the chord that passes through them. What is the expected value of the distance of the two points relative to the length of the chord? We will answer this question and discuss its relevance to Sylvester's Problem.

2:00 – 2:25* Mu-Ling Chang (UW-Platteville)

How many zeros are at the end of a factorial on any base?

Let n be a positive integer. The notation $n!$, which is called the n factorial, denotes the product of the first n positive integers.

In this talk, I will provide a method of determining the number of zeros at the end of $n!$ on any base without multiplying it out.

2:30 – 2:55 Julie Letellier (UW-Whitewater)

A Furnace Repair, Scrabble-grams, and "The Biggest Loser"

A whimsical look at the problems I encountered and developed as well as other activities I engaged in during my fall sabbatical.

2:30 – 2:55* Thomas Drucker (UW-Whitewater)

Finding Room for Infinitesimals

One of the accomplishments of nineteenth-century analysis was banishing infinitesimals from the foundations of the calculus. Abraham Robinson's introduction of non-standard analysis in the twentieth century might have appeared to be a step backwards. This talk will look at how mathematics changed over the period between 1850 and 1950 to explain why the use of infinitesimals does not involve a return to superstition.

2:30 – 2:55 James Swenson (UW-Platteville)

The mod-two cohomology of finite Coxeter groups

Group cohomology is interesting to study because it links a variety of mathematical specialties, but it's hard to find good example computations. We'll show how Quillen's

theorem can be used to explicitly compute the mod-two cohomology algebras of the finite Coxeter groups.

3:00 – 3:50 *Invited Address* Richard Cleary (Bentley College)

An Overview of Benford's Law with Applications to Fraud Detection

Benford's Law proposes a distribution of first digits in measurements that span many orders of magnitude. Auditors and others with an interest in data integrity have begun using Benford's law as part of fraud detection schemes in a variety of settings. In this presentation we give an overview of Benford's law, discuss some situations in which it is used, and present some ways to incorporate it as a teaching tool in elementary mathematics and statistics courses. For example, we discuss how the Benford's Law output from popular auditing software raises interesting statistical questions for the accounting community. (This work is being done jointly with Prof. Jay Thibodeau, Bentley College Department of Accountancy.)

4:00 – 4:55 *Invited Address* Colin Adams (Williams College)

Blown Away: What Knot to Do When Sailing

Being a tale of adventure on the high seas involving great risk to the tale teller, and how an understanding of the mathematical theory of knots saved his bacon. No nautical or mathematical background assumed.

5:00 - 6:00 Reception, courtesy of the MATC Math Club

5:30 – 6:30 “Face Off!” The Mathematics Game Show

Organized by Dr. Ken Price and Dr. Steve Szydluk, UW-Oshkosh

6:30 *Banquet* Art Benjamin (Harvey Mudd College)

The Secrets of Mental Math (8:00)

Art is a mathematician who performs his mixture of math and magic to audiences all over the world, including the Magic Castle in Hollywood. He has demonstrated and explained his calculating talents in his book "Secrets of Mental Math" and on numerous television and radio programs, including The Today Show, CNN, and National Public Radio. He has been featured in Scientific American, Omni, Discover, People, Esquire, New York Times, Los Angeles Times, and Reader's Digest.

Saturday, April 26, 2008

8:00 – 10:00 Registration

8:00 – 11:00 Exhibits, MAA Book Sale

8:00 – 8:50 Business Meeting

9:00 – 9:50* Linda Uselmann (Edgewood College)

Interesting problems to engage future teachers in deep mathematical discussions

I use problems that mimic or are taken from actual student (elementary, secondary) responses to tough mathematics questions, and use them to engage preservice students in mathematical discussions. I invite participants to add their own mathematical ideas and explanations, share problems that used at other institutions, and discuss the approach of using pre-college level student work in a course for college students.

9:00 – 9:50* Susan Harrison (UW-Eau Claire)

Online assignments - isolating their effectiveness

Mathematics textbooks today are frequently supplemented with publisher-developed courseware that provides the instructor with the capability of utilizing online homework assignments with instant feedback. Recent studies investigating the effectiveness of online homework included course-targeted tutoring - a combination that proved successful in increasing levels of student performance. But, one must ask, "how much of the students' improvements can be attributed to the online homework assignments?" To help isolate the effectiveness of online homework assignments, a study was conducted during fall 2007 with four sections of Intermediate Algebra students at UW-Eau Claire. The study involved using only one treatment variable - the use of online homework, and holding other variables as constant as possible. The effectiveness of online homework on student

performance based on quantitative data, collected from quizzes and tests, and the effect of using online homework on student attitudes based on the qualitative data collected from surveys will be presented.

9:00 – 9:50* Jinbo Lu (UW-Marshfield)

Energy reduction by averaging on graphs

A general principle in harmonic map theory is that averaging reduces energy, therefore useful in proving the existence of harmonic maps. We will make this principle precise in the case of underlying space being graphs. This talk is accessible to anyone with a basic knowledge in linear algebra and graph theory.

9:00 – 9:25* Laura Schmidt (UW-Stout)

Dealing with Anxiety and Attitudes Towards Mathematics

When teaching a general education course, we encounter students with various backgrounds and dispositions. Our main general education course in mathematics is Introduction to College Math I.

Unfortunately, the majority of dispositions are unfavorable and most students enter the class with negative attitudes and anxiety. In the spring of 2007, I addressed these issues through a scholarship of teaching and learning project. The purpose of my project was to study the impact of self-reflection, subject relevancy and group work on anxiety and attitudes in an algebra classroom. The self-reflection portion was implemented using on-line surveys in a course management system. The subject relevancy and group work was integrated in the course through weekly worksheets and four projects. During my presentation, I will discuss the details of the project, challenges encountered, and results.

9:00 – 9:25 Terry Jo Leiterman (Saint Norbert College)

The Ultimate Class Project . . . and no grade!

To the students, the task sounded impossible. Build a square wheel bicycle that moves smoothly; one you could pedal all day long if you wished. With an ah-ha moment, a short loss of interest, many hours, several mistakes, and no grade, a square wheel bicycle was built (and rode!) by a class of twelve Mathematical Modeling students. In this talk, a teacher who took a shot at an idea shares a fortunate success with a pedagogical experiment. A story with objectives, uncertainties, surprises, and missteps is told. Student reflections confirm that the goal, and more, was met!

9:30 – 9:55 Terry Jo Leiterman (Saint Norbert College)

The Blakeslet Singularity

J.R. Blake (1971) constructed the Green's function for Stokes equations in the presence of a no-slip plane using the method of images.

The Stokeslet is the primary fundamental solution of Stokes equations and is found as the Green's function resulting from a singular point force applied in free space. As an analog, the fundamental solution which represents the solution due to a singular point force applied in the half space bounded by a no-slip plane is termed, by these authors, the Blakeslet. Now, the basis of singularity theory is to construct solutions to particular boundary value problems through the superposition of fundamental solutions chosen in kind, strength, and location. A superposition of Blakeslet singularities can be constructed to model the motion of a body attached to a no-slip plane sweeping an upright cone. The solution is valid in the asymptotic limit of a slender body. In this talk, in addition to the underlying properties of the Blakeslet, the construction of this solution is discussed. Further, trajectory and flow properties, including far field behavior, are presented.

9:30 – 9:55* Benjamin Collins (UW-Platteville)

Al-Samaw'al and Division of Polynomials

Present-day mathematics students would hesitate to divide $20x^6 + 2x^5 + 58x^4 + 75x^3 + 125x^2 + 196x + 94 + 40x^{-1} + 50x^{-2} + 90x^{-3} + 20x^{-4}$ by $2x^3 + 5x + 5 + 10x^{-1}$. Yet eleventh century Islamic mathematician al-Samaw'al ben Yahya ben Yahuda al-Maghribi performed this division smoothly, without the benefit of modern notation or symbolic representation. In cases where the polynomials do not divide evenly, al-Samaw'al was even able to indicate an infinite series representation for the quotient. We will take a look at al-Samaw'al's method, and see how it might be introduced in a College Algebra course to supplement (or replace) current methods of polynomial division.

10:00 – 10:25* David Milovich (UW-Madison)

Math Night: a university reaching out to high schoolers

For several years, volunteer math grad students and faculty at UW-Madison have given monthly evening talks---Math Nights---to high schoolers about interesting yet accessible math topics. Local high school teachers advertise these talks to their students. While it helps to have a big math department to draw on for speakers, Math Nights could be done by colleges of any size; the only important limiting factor is enthusiasm.

10:00 – 10:25* Carol Seaman (UW-Oshkosh)

A Look at Teacher Comments on Written Work in Mathematics: What Do Students Say?

Preservice teachers at UW Oshkosh prepare substantial written reports on problem solutions. Instructors spend significant time responding to their work with written comments. In this talk I will present the results of a study designed to determine how our students make use of these comments in learning and communicating mathematics.

10:00 – 10:50 Panel Discussion L.D Gunawardena (UW-Oshkosh), Moderator

The Role of an Elementary Statistics Course

10:00 – 10:25* John Beam (UW-Oshkosh)

How to Win a Million Dollars

Exploiting the conditional nature of the convergence of the alternating harmonic series, we will turn fair bets into an unfair one, guaranteed to pay you at least a million dollars.

10:30 – 10:55* Kathy Tomlinson (UW-River Falls)

Cooperative Guided Reflection for Optimization Problem Solving

This is a study of the ways student learning is impacted by a cooperative guided reflection assignment on optimization problems in Calculus I. The study contributes to an understanding of how the pedagogical practices of writing to learn and cooperative learning effect student growth in problem solving. The investigation uses both quantitative and qualitative methodologies: pre and post surveys of student understanding of problem solving concepts and attitudes about problem solving; comparison of exam performance on optimization problems between students who do the assignment and students in a different section of Calculus I who do not do the assignment; and analysis of students' written work.

10:30 – 10:55* William A. Sargeant (UW-Whitewater)

Prospective Secondary Mathematics Teachers' Purposes and Ways of Interacting with Technology when Problem Solving

The purposes for, and ways in which, technology was used by four prospective secondary mathematics teachers as part of their problem solving efforts during semi-structured task-based interviews will be discussed. The researcher extends a framework (Zbiek, 1998) for analyzing the purposes for, and ways of, using technology and the talk will focus on the purpose of "delegating work" in particular.

10:30 – 10:55* Steve List (UW-River Falls)

Conditional Probability With a Deck of Cards

This talk examines several surprising probabilities encountered when flipping through a deck of cards.

11:00 – noon Invited Address Art Benjamin (Harvey Mudd College)

Combinatorial Trigonometry (and a method to DIE for)

Many trigonometric identities, including the Pythagorean theorem, have combinatorial proofs. Furthermore, some combinatorial problems have trigonometric solutions. All of these problems can be reduced to alternating sums, and are attacked by a technique we call D.I.E. (Description, Involution, Exception). This technique offers new insights to identities involving binomial coefficients, Fibonacci numbers, derangements, zig-zag permutations, and Chebyshev polynomials.

Face Off, The Mathematics Game Show

What is it? Face Off is a mathematics quiz show with questions from the broad realm of mathematics. And we mean broad! Teams of 2-4 students representing their schools compete to answer these questions. Each team gets a sign with the face of a mathematician (For example, your team could play as Descartes, Gauss, Hilbert, Fermat, or Newton.) A team holds up its sign to answer a question and earns points if its answer is correct. Teams can use a calculator, paper, and pencil. For more information, visit the Face Off website whose address is given below.

Where is it? MAA-Wisconsin Section meeting at MATC in Madison

When is it? Friday, April 25, 5:30-6:30

Sample Questions:

The *Off Limits* category contained the following questions.

20 pts. What is $\lim_{x \rightarrow \pi/2} \frac{\sin x}{x}$?

40 pts. What is $\lim_{x \rightarrow 2} \frac{x-3}{x-2}$?

60 pts. What is $\lim_{x \rightarrow 0} \frac{|x|}{x}$?

80 pts. What is $\lim_{x \rightarrow 1} \frac{2^x - 2}{x - 1}$?

The *Take a Number* category contained the following questions.

20 pts. How many pips are on a standard die?

40 pts. What prime number is both the sum of two primes and the difference of two primes?

60 pts. What two-digit number has a cube root equal to the square root of the sum of its digits?

80 pts. What is the smallest non-palindromic number whose square is a palindrome?

Please contact one of the organizers if you would like to enter a team. Any student who has taken or is enrolled in Calculus I is eligible to join a Face Off team representing their school. If a school doesn't have enough interested students, contact the organizers anyway – we can combine interested students to form hybrid teams. Space will be limited, so form a team soon and let us know of your interest!

Face Off Organizers:

Dr. Ken Price (pricek@uwosh.edu, (920)424-1057),

Dr. Steve Szydlik (szydliks@uwosh.edu, (920)424-7346),

<http://www.uwosh.edu/departments/mathematics/mathclub/faceoff.htm>

Know Your Wisconsin Mathematician

Interview with **Prof. Rick Tufte** by Benjamin V.C. Collins

I think the first question on the minds of your friends in the MAA is: How is your health? [In 2003, Rick had surgery that removed most of a non-malignant brain tumor the size of a baseball.]

Well, the past month, I have been relatively good. I think I'm slowly getting better, but they say it's a slow process.

Where did you grow up?

My folks moved around quite a bit when I was young. So I lived in several little towns in North Dakota. Primarily Mott, North Dakota.

When did you first become interested in mathematics?

I guess in Junior High School. Probably long about grade 8 or so I started having a more serious interest in it. This was primarily because of a teacher who encouraged me, Homer Moeller.

Where did you go to undergraduate school?

The University of North Dakota, where I majored in math, with a minor in physics.

And what about graduate school?

First I went to University of Missouri, where I got a master's degree. Later, I got my Ph.D. at the University of Wisconsin-Madison. I took a few years off. I got my Ph.D. in 1990.

That was after you came to UW-Platteville?

Yes.

How did you end up here?

Well, I was a T.A. down there in Columbia, when I was sitting at my desk one day. They had a great big room where all the T.A.'s hung out. One day, the chair of the department came in and he said, "Hey, there's a fellow here from the University of Wisconsin System, on a recruiting trip. If you're interested, he's in room such-and-such." So with that, I went over there, and eventually I ended up at UWP.

So what was UWP like back then?

Well, it hasn't changed a whole lot. The campus is pretty much the same way as it was then. Bjarne Ullsvik was Chancellor then.

You met Marilyn here in Platteville?

Yes. We met at the Dairy Days parade. Well, I'd seen her around campus before then, but that's where we had our first chance, and went out for lunch after the parade.

When were you married?

1972.

So what courses did you like to teach?

My favorite courses to teach were the courses in the calculus sequence, particularly the first one. That was primarily because of the students. You generally had very eager students there. They were showing up in college for the first time. They didn't have any preconceived ideas about what should be happening.

Over the years, did you find that teaching of mathematics changed?

I'd say the biggest change came when we started using handheld calculators. They really changed the way we taught. Of course, it was kind of a haphazard type of thing. Not everybody in the department used them in the same way. Maybe that's the only way it can be done.

How were you involved with the MAA over the years?

When I first came to Platteville, Norbert Kunzi from UW-Oshkosh came and talked to me and asked me if I'd be interested in running for one of the state offices of the MAA, I forget which one. That's how it started. Since then, I've served as chair and as governor.

What do you think is the best part of being a mathematician?

I can't think of anything else I'd rather do than teach mathematics. I was always primarily interested in teaching.

What was the worst part of teaching mathematics?

Probably student complaints that it was too much work. Primarily that occurred in the introductory classes, like College Algebra.

How would you describe what you did when you were talking to somebody outside of mathematics?

Well, you're familiar with the reaction that you get when you're at a faculty party and you tell someone you teach mathematics. Their first reaction is "Oh, I was never good at math."

So what would you say?

I usually say, "Well, I'm not very good, either. I always found that if I studied enough, it was something that I could understand."

Editor's Note: Rick's health keeps him from getting out very much. I'm sure that he would appreciate a note from any of his friends saying that you saw this article, and letting him know that you are thinking of him. Rick's address is Rick Tufte, 980 Hillcrest Circle, Platteville, WI 53818

In Memoriam

William Walton (Bill) Hall, Jr., longtime UW-Richland mathematics professor and a member of the MAA(WI), died on November 10, 2007 at the age of 82.

A graduate of West Point Military Academy, and the University of Illinois, Professor Hall started his teaching career at UW-Richland in 1968, following a distinguished military career that earned him the country's highest non-combat military honor, the Legion of Merit. He retired in 1990. He has given several presentations at the MAA(WI) on four-color map theorem.

Professor Hall and his wife Doris continued to reside in Richland Center.

Campus News

Carroll College

submitted by Kristen Lampe

Kristen Lampe and **Linda Uselmann** (Edgewood College) had their paper "Pen Pals: Practicing Problem Solving" accepted for publication in NCTM's Mathematics Teaching in the Middle School.

Madison Area Technical College

submitted by J. Sriskandarajah

Spring Math Club Events:

Monday, January 28, 2008, 3:30 PM, Room 321

Professor **Ranjan Roy**, Beloit College, "Fermat, modular arithmetic, and cryptology"

Tuesday, February 19, 2008, 3:30 PM, Room 321

Professor **Susan Hollingsworth**, Edgewood College, "Voting Paradoxes"

Thursday, March 13, 2008, 3:30 PM, Room 321

Professor **John Frohlinger**, St. Norbert College, "The Golden Ratio"

Friday, April 18, 2008, 9:00 AM, Mitby Theater

Dale R. Buske, St. Cloud State University, "Lingo...It's Not Just Words"

Friday, April 25, 2008, Noon, Room TBD

Professor **Colin Adams**, Williams College, "Why Knot?"

Wednesday, May 7, 2008, 3:30 PM, Room 321

Professor **Norbert Kuenzi**, UW-Oshkosh, "The Tower of Hanoi Puzzle"

Further information is available at <http://matcmadison.edu/studentlife/clubs/mathclub>

Dr. Michael Penkava received a Fulbright award to continue his research at Eotvos Lorand University in Budapest during the Spring Semester 2008.

Dr Mohamed Elgindi and **Dr Michael Howe** will host a summer research program (SUREPAM) for the second consecutive year at the UWEC campus. This program provides eight weeks of concentrated mathematics research studies funded by the National Science Foundation. It supports ten undergraduate mathematics majors to collaborate with faculty on a research project in pure or applied mathematics. For further information and application materials, please visit: www.uwec.edu/surepam.

At the Joint Mathematics Meetings 2008, San Diego, California **Dr. Don Reynolds** and **Dr. Simei Tong** were invited to speak at the AMS-MAA Special Session on the Scholarship of Teaching and Learning (SoTL) in Mathematics. The talk was based on the project "Building the Capacity of a Department of Mathematics to Engage in the Scholarship of Teaching and Learning," funded by a UW System SoTL grant. UWEC undergraduate student **Mitch Phillipson** gave a presentation titled, "Shortest paths and optimal solutions for evacuation in emergency situations" at the AMS general session.

Also at the Joint Meeting, **Christopher DeCleene** and **Eric Weber** won a poster award for "Deformations of Two Dimensional Associative Infinity Algebras", based on their REU project with fellow student **Mitch Phillipson** and faculty mentor, **Dr. Michael Penkava**. Mitch Phillipson also displayed the poster titled "Optimal Evacuations in Emergency Situations" summarizing an on-going faculty/student research project by Mitch Phillipson and **Tayan Seltzer** under faculty advisors **Dr. Simei Tong** and **Dr. Michael Wick**.

At the 2008 Joint Mathematics Meetings, a participant in the 2007 SUREPAM program (**Xiaowen Cheng**, a student at the Univ. of Minn.-Twin Cities) presented a talk on the work that she did with another student (**Jarod Hart**, UW-La Crosse) under the direction of UW-Eau Claire faculty member **Dr. James Walker**. The talk was entitled "Making Pictures of Music." A web page describing their work, can be found at <http://www.uwec.edu/walkerjs/PicturesOfMusic/>.

Frank Lee Emmert III, a Mathematics and Chemistry major from Superior, presented the paper "On the Computation of Elongational Viscosity-Shear Rate Curves for Polymeric Liquids" at the Second International Conference on Mathematics: Trends and Developments, organized by the Egyptian Mathematical Society, on December 27, 2007 in Cairo, Egypt. This paper was the result of a student-faculty research project with **Dr. Mohamed Elgindi**.

Dr. Alex Smith was selected as the new Department Chair. He earned his Ph.D. from UC-Berkeley with research in complex manifolds, and has been a member of the faculty of UWEC since 1990.

Mathematics Educator **Dr. Kate Masarik** joined the department in fall 2007. Kate, a graduate of UC-Boulder taught most recently at San Diego State University before returning to her native state, Wisconsin.

Dr. Susan Harrison joined the UWEC Mathematics Department having served in the Computer Science Department for 24 years. Her specialty is remedial mathematics education.

Dr. Jessica Kraker with **Douglas M. Hawkins**, **Subhash C. Basak**, **Ramanathan Natarajan**, **Denise Mills** had the paper "*Quantitative Structure-Activity Relationship (QSAR) modeling of juvenile hormone activity: Comparison of validation procedures*" published in the Journal of Chemometrics and Intelligent Laboratory Systems, vol. 87, p. 33-42, 2007.

Dr. Simei Tong was invited to attend the August 2007 workshop of the American Institution of Mathematics (AIM), "Fourier Analytic Methods in Convex Geometry," supported by AIM Research Conference Center in Palo Alto, California.

The second edition of **Dr. James S. Walker's** award winning textbook on wavelets, *A Primer on Wavelets and their Scientific Applications*, was published this February. It contains over 300 pages and 200 exercises covering the basic material on wavelets and their applications. For more details, including price and ordering information, please visit the web page <http://www.uwec.edu/walkerjs/Primer/>.

UW-Milwaukee

submitted by Jay H. Beder

The 19th annual Marden Lecture in Mathematics will be presented by **John H. Hubbard** of Cornell University and Université de Provence. The public lecture will be held on Wednesday, March 12, 2008, 4:00pm - 5:00pm, in UWM's Chemistry Bldg, Room 180, with a reception following the lecture in EMS E495A. The title and abstract are to be announced. Information will be posted as it becomes available at <http://www.math.uwm.edu/Events/Marden/mardenlect.html>.

The University of Wisconsin–Milwaukee and Marquette University are hosting the 42nd annual Spring Topology and Dynamics Conference at the Hyatt Regency in downtown Milwaukee on March 13-15. The local organizing committee includes faculty from UWM, Marquette and Alverno College. More information is available at <http://www.uwm.edu/Dept/Math/Events/stdc2008/>.

UW-Platteville

submitted by Sheryl Wills

Miyeon Kwon received the College of Engineering, Mathematics, and Science Exemplary Professional Development Award.

Kevin Haertzen received the Tau Beta Epsilon Excellence in Teaching Award.

UW-Stout

submitted by Steve Deckelman

Laura Schmidt presented her work on “Dealing with Anxiety and Attitudes in an Algebra Class” at the Lilly North Conference on Teaching in October and at the Joint Meetings in San Diego this year. Her work was also published in an article in the Academic Exchange Quarterly Journal and a short PR article in the Dunn County News, and is showcased on the University web page

<http://www2.uwstout.edu/news/index.asp?event=news.get&ID=1153> . She also gave a presentation on Stout's Engagement Project during professional development week in which a group of 9 faculty from 6 different disciplines is investigating the questions of whether engagement affects learning.

Joy Becker, Nelu Ghenciu, Matt Horak and **Helen Schroeder** presented at the conference “Promoting Deep Learning” put on by The Collaboration for the Advancement of College Teaching and Learning. Their talk, “Building the ‘perfect’ course one lesson at a time” was aimed at a general audience and introduced others to the concept of Lesson Study and how it might benefit their departments. The talk was based on their experiences with Lesson Study during the fall semester.

UW-Whitewater

submitted by Mohammad Ahmadi

The search is underway to fill three tenure track positions; one in Mathematics Education and two in Math/Computer Science.

Mohammad Ahmadi, Thomas Drucker, Jonathan Kane, and Tamas Szabo attended AMS/MAA January meeting in San Diego. Drucker spoke in the joint AMS-MAA History of Mathematics session on Kurt Godel's publications in philosophy of mathematics. Recently, his book ‘Perspectives on the History of Mathematical Logic’ was reprinted by Birkhauser. This book was originally published in 1991 in Birkhauser series of Modern Classics. Congratulations is in order for Drucker who became the Treasurer of the Philosophy of Mathematics Special Interest Group of the MAA (POMSIGMAA).

The WI ESEA Teacher Quality Improvement Program awarded a grant, titled “Developing Mathematics Teacher-leaders through Collaborative Teams of Inservice and Preservice teachers,” to UW-Whitewater in partnership with the Whitewater Unified School District. **Fe Evangelista** (from Math and Computer Science) and **Laura Moranchek** (from Curriculum and Instruction) are co-investigators of the grant.

William Mickelson (from Math and Computer Science) is the internal evaluator.

Jonathan Kane received a grant of \$10,000 from the Bradley Foundation in Milwaukee to fund the April, 2008 Purple Comet Math Meet, an on-line team mathematics competition for middle and high school students run by Kane, **Titu Andreescu**, and **Bennette Harris**. Information about the contest is available at <http://purplecomet.org>.

Viterbo University

submitted by Rich Maresh

Larry Krajewski, who has been here at Viterbo since 1971, is retiring this spring. He will be missed! We are engaged in a search at present, not that we can exactly “replace” him.

Executive Committee 2007 – 2008

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