

Mathematics and Computer Science

Department Newsletter

Department News

Nearly all the best things that came to me in life have been unexpected, unplanned by me."
- Carl Sandburg

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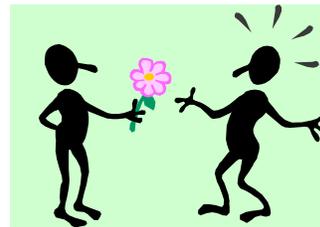
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Expect the unexpected, a saying we've heard all our lives. Often we set limits on our expectations, which can sometimes make the unexpected a pleasant surprise.

Last year, our inaugural U.P. High School Math Challenge was a big success, drawing nine teams from area high schools. This year we expected a similar turnout. What an unexpected surprise when 20 teams registered—more than twice as many as last year!

In March, Peggy House had the unexpected pleasure of being honored by the Marquette area Zonta Club

at their annual Rose Day Event. Dr. House was recognized for her efforts in advancing the educational status of women. (see page 4)



This past fall, our department was the recipient of the Kiltinen Mathematics and Computer Science Idea Endowment, an unexpected windfall which will support new programs and projects in this department that may

not be funded through traditional sources. (see page 2)

In February we were told that the President of the United States would be visiting Marquette and our campus. Totally unexpected for all of us, but especially for our own professor, Gwen Hetler, an ordained Episcopalian priest, who experienced the unexpected chance of a lifetime when she was asked to give the Invocation at the pre-presidential address activities.

Don't set limits on your expectations. Expect the unexpected—and enjoy!

(continued on pg 7)

The Mathematics and Computer Science Newsletter is published once a year for alumni and friends of the Mathematics and Computer Science Department.

Spring 2011
Sue LaForais
Production Editor

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New Faculty by J.D. Phillips

This fall we welcome a new colleague to the department: Linda B. Lawton. Linda received her doctorate in mathematics from the University of Illinois, Urbana-Champaign, in 2002. She has a master's degree from the University of Illinois (1996) and a bachelor's degree from Baylor (1994). Dr. Lawton taught for five years (Western Illinois Univer-

sity and McKendree College) before moving to industry, where she worked as an actuary for five years, before coming to NMU. Her scholarly interests are broad, and include logic, music, and actuarial sciences. Her duties here will include not only those common to all of us in the department—teach a broad range of classes, maintain an active research program, and

serve the university—but she will also help us establish an actuarial sciences presence in the department. We'll keep you updated in the coming years on the progress of our actuarial sciences activities. But for now, please join me in welcoming Linda to the department; we're pleased as punch to have her.

Welcome!

Good ideas = Great Experiences

Retired NMU professor John Kiltinen '63 BA and his wife, Pauline, recently established the Kiltinen Mathematics and Computer Science Idea Endowment with a \$100,000 pledge. But because newly established endowments take time to achieve earnings that can be awarded, the couple also gave a \$10,000 expendable gift to begin funding projects this semester and be distributed evenly over five years.

The endowment will support initiatives of the NMU Mathematics and Computer Science Department. Emphasis will be given to new programs that might not otherwise be considered because they are not funded through traditional sources.

"I don't want to see good ideas killed before they can be fleshed out because there aren't existing funds to support them," says John Kiltinen. "The main objective is to help enrich the experience for Northern students. Preference will be given to projects that will give them learning opportunities beyond the classroom."

NMU recently hosted the sectional meeting of the Mathematical Association of America. The first installment of the \$10,000 gift covered expenses for three keynote speakers: Igor Kriz of the University

of Michigan, who in addition to his talk presented an organ recital featuring a world-premiere composition; and Loren Graham and Jean-Michel Kantor, co-authors of *Naming Infinity: A True Story of Religious Mysticism and Mathematical Creativity*. Their book compares French mathematicians of the early 20th century, whose rational and



Pictured from left to right: J.D. Phillips, head of NMU Mathematics and Computer Science Department, Pauline and John Kiltinen

secular world view made them doubt the legitimacy of infinite sets, with their Russian counterparts, particularly those who subscribed to a religious doctrine known as "name worshipping" and believed that humans had absolute freedom to invent mathematical objects.

"We wouldn't have the opportunity to hear about the authors' research without financial support from the Kiltinens," says J.D. Phillips, head of the NMU Mathematics and Computer Science Department. "Their endowment is a very generous pledge that will enable us to pursue worthy projects that might otherwise slip through the cracks. John's emphasis is on students and teaching. I like the fact he wants the criteria to remain flexible to promote the most creative use of funds."

The department will devise endowment guidelines and make all funding decisions. Award amounts and numbers will vary based upon the earnings available and the number of appropriate proposals.

A Marquette native and NMU alumnus, John Kiltinen was a member of Northern's faculty from 1971-2007. He remains connected to the university in retirement, serving on the department's colloquium committee and as faculty adviser for the NMU Finn Club. Kiltinen also keeps busy with personal projects related to his Finnish heritage and to his combined interests in music and mathematics.

Story and picture courtesy of NMU Northern Horizons Magazine

As always, we thank everyone who made a donation to this department through the NMU Foundation. If you would like to see travel opportunities, activities, programs and organizations continue for our students, please mark your donations specifically for "Mathematics and Computer Science."

Outstanding Students

Charles R. Rye 2011

Outstanding Graduating Senior

Charles Rye graduated in April *magna cum laude* with a major in computer science and a minor in mathematics. He has been on the Dean's List every semester and graduated with a perfect 4.0 GPA.



Charles Rye

In 2010 Charles attended the Argonne National Laboratory's annual undergraduate symposium where he presented his research paper entitled *Benchmarking of Important Tasks Across Linux Distributions*. He has also participated in four programming contests and was on the team that took 21st in the region and 3rd on-site in Sault Ste. Marie during the 2009 ACM (Association for Computing Machinery) Programming Contest.

Charles has taken many optional high-level computer science classes including Advanced Web Programming, Advanced Networking, and special topics in Advanced Unix Administration, Machine Learning, and Videogames. He has also independently created an algorithm and corresponding program that can solve the classic Towers of Hanoi problem more efficiently than the solution given in most textbooks.

Michael H. Morissette 2011

Outstanding Graduate Student

Michael Morissette has been a mathematics teacher at Westwood High School in Ishpeming for the past eight years. He is a graduate of Westwood High School and a Northern Michigan University alumnus, graduating *magna cum laude* in 2002. As an undergrad, he co-authored a journal article entitled *Maximizing the Fit of a Box Spring Mattress up a Stairwell* with Dr. David Buhl and fellow student Jeff Wolf; the article was published in the November 2006 edition of *Mathematics Teacher*. Michael received his master of science in mathematics education in December 2010. His master's project is titled *Implementing Podcasting in a High School Geometry Course*.

Michael tells us that when he is not teaching he can usually be found sitting on an undisclosed lake in his boat or ice shanty being mocked by fish as they swim by.



Michael Morissette

Grad Student News

Other graduate students who completed their master's project (MAED 594) and received their master of science in math education during the 2010-11 school year include:

Valery Masuga, *Online Mathematics Alignment Toolkit Research and Resources*

Gary Matelski, *Effects of Mathematical Learning Goals on Student Achievement in a Unit on Linear Equations*

Last fall, the White House announced the names of science and math teachers from across the country who were the recipients of the 2010 Presidential Award for Excellence in Mathematics and Science Teaching. This honor is bestowed annually to the best pre-college-level science and mathematics teachers from across the country. **Renee Yake**, teacher at Iron Mountain High School and a graduate of our master's program, was the Michigan winner for mathematics. Winners of this Presidential honor receive a \$10,000 award from the National Science Foundation to be used at their discretion. They also receive an expenses-paid trip to Washington, D.C., for an awards ceremony and several days of educational and celebratory events, including visits with members of Congress and science agency leaders.



Faculty Receive Awards

Peggy House was honored by the Zonta Club of Marquette in March when the club held its annual Rose Day Ceremony recognizing members of the community who strive to advance the economic, political, financial, health and professional status of women.

Dr. House has been deeply committed to serving the educational community, particularly teachers and students of the U.P. and has received in excess of \$2 million in grants from the U.S. Department of Education for her work in this area. She has advised, taught and mentored numerous students who have gone on to become leaders in math education and who give her high praise as an innovative, inspiring teacher and a very caring mentor.



Her contributions extend nationally as well, with her involvement with the National Council of Teachers of Mathematics (NCTM), NASA, and the White House Office of Science and Technology Policy. She was chair and series editor for the NCTM Navigation project, a series of 35 books which was developed for math classroom teachers and students, and in 2005 received the

Lifetime Achievement Award from NCTM.

Peggy was recognized by Zonta for her effectiveness as a female role model, inspirational teacher and professional in math education, advancing the educational status of women locally and nationally.

The Zonta Club is made up of business professionals working to advance the status of women worldwide through service and advocacy.

Carol Bell and **Ken Culp** were the recipients of the 2010-11 Technology Innovation Awards for Faculty. This program recognizes exemplary faculty use of technology in the areas of teaching, research and community service. The award is designed to recognize innovation in the introduction and application of technology, including but not limited to laptop computers in the academic environment. This award program is open to all NMU faculty members or teams of faculty members.

The three categories of the award include:

- Teaching improvement, which demonstrates the application of innovative educational technology for improving teaching effectiveness.
- Research applications, which demonstrates the application of innovative technology for professional research.
- Community information outreach services, which demonstrates the application of innovative technology in community service.

Carol Bell was awarded the Technology Innovation Award in the

Teaching Improvement Category for her project *Algebra for All: Technology Integration into High School Teaching*, which provides technology innovations that enhance the way algebra is taught to children. Workshops and webinars allow her to share materials with K-12 teachers. These materials focus on how technology can improve motivation and application. She also integrates technology into her NMU courses.

Ken Culp (adjunct instructor) also received the Technology Innovation Award in the Teaching Improvement Category for his project *NMU Stat-Help*, which he developed when he noticed that students in his beginning statistics classes were having a hard time visualizing computations and probability distributions.

NMU's Educational Technology and Resources Policy Committee (ETRPC) presented the awards at a special Celebration of Excellence in Teaching and Scholarship Ceremony in December.



Congratulations!

Student Activities

2nd Annual U.P. High School Math Challenge

The 2nd Annual Upper Peninsula High School Math Challenge was a huge success, drawing 79 high school students comprising 20 teams from seven high schools from across the Upper Peninsula.

Round one was the individual event: ten problems, one at a time, with time limits of three to five minutes. Round two was the team event: five problems, given to a team all at once. They had 45 minutes to solve the problems. Round three was the relay event: each member of the team was given a problem. Each member, other than the first, requires the answer of the previous player to solve their own problem. This was, to the students, by far the most fun event.

Houghton High School took all three places in the individual contest. Houghton was also the first place team, with Munising High School coming in second and Marquette Senior High School the third place team.

Thanks to the Kiltinen Mathematics and Computer Science Idea Endowment Fund, this year we saw the addition of a traveling trophy which will be held by the first place team's high school for one year, until the next contest.

The contest was coordinated by **Andy Poe** and **Rose Parks**. NMU student involvement made for a smooth-running contest and lots of excitement for all.

Math Club

The Math Club was revived this year due to the efforts of senior **Alec Hill**, president of the club. In addition to consuming large amounts of pizza, the club held a Pi Day bake sale, was an integral part of running the High School Math Challenge and participated in the annual programming contest. Mathematical talks were given by club members during their meetings and members attended many of the department colloquia. Plans for next year include: participating in Fall Fest activities, helping with department sponsored contests and mentoring the Marquette Senior High School robotics team.

12th Annual Programming Contest

The 12th Annual Northern Michigan University Invitational Programming Contest took place on Saturday, March 26, in Jamrich Hall. Seventy-two students on 26 teams representing four schools competed. In addition to NMU, schools participating were the College of Saint Scholastica, Michigan Technological University and Algoma University.

Michigan Tech was the first place school with NMU coming in second. Northern's team, MJC (**Matt Knox**, **Charles Rye** and **Axel Cislucyis**), took first place in the undergraduate team category with Michigan Tech taking second and third.

Andy Poe and the NMU student chapter of the Association for Computing Machinery (ACM) planned and hosted this exciting event, while myriad students and faculty working behind the scenes guaranteed that the contest ran as smoothly as possible.

Students Attend Spring Conference

Six faculty accompanied 13 secondary education mathematics and mathematics students to the Minnesota Council of Teachers of Mathematics (MCTM) Spring Conference, *Finding Mathematics in the Real World*, held in Duluth, Minn., April 29-30.

Four faculty and seven students also presented at the conference.



Front row, l-r: Shaun Anderson, Lisa Sedlar, Steve Smith, Rose Parks, Josh Martin, Rachael Pomeroy, Emma Dake, Peggy House, Chris Weber, Dave Buhl

Back row, l-r: Carol Bell, John Goodney, Ben St. Aubin, Kelsey Drew, John Sokol, Heather Lawson, Katie Grunow, John Croze and Christina Moffett

Internships in Computer Science

Practical experience in a formal work environment is a valuable aspect of a computer science curriculum. The intent of the computer science internship program at Northern is to provide students with an opportunity to earn academic credit while gaining work experience at a business, government office or other institutional computer center. Students are employed on a full-time basis, typically for a four- to eight-month period. The hours, wages and benefits associated with the job are determined by the employer prior to hiring the intern. Although tasks assigned to the student usually correspond to the student's educational background, new and exciting challenges may be encountered. Additional formal or informal training may be provided by the employer either on-site or off-site. Computer science-related tasks, such as network design and installation, software programming,

testing, documentation and user training would be considered appropriate job duties for an intern.



Internships can be credit generating for the student. In addition to providing work experience the internship must also provide a learning environment to gain technical skills in the field of computer science. The student must also work under a mentor or expert who can provide training and guidance.

The internship experience allows students to see their profession in a more realistic light. Working side-by-side with programmers, analysts and computer users helps develop a sense of responsibility and confidence. Listing professional work experience on a resume helps secure employment after graduation. In some cases, students are offered employment by the company where they interned. Upon returning to classes after an internship, students tend to be more focused on their course work and show more interest in research.

Computer science majors **Darren St. Amour**

(pictured) and **Jeff Scanlon** were chosen for internships with Intel Corporation for the 2010-11 academic year. The internships included a year-long, dual-campus internship program beginning with the summer at Intel headquarters in Hillsboro, Ore., and the following two semesters on the NMU campus under the supervision of Dave Maki and NMU's technical staff.

Give Up Spring Break?

While most students were enjoying their spring break vacationing in warm weather or visiting family and friends back home, this was not the case for some NMU computer science students this year as they made the choice to stay at school and hit the books. Seventeen students gave up their week off to stay in Marquette and attend CS 496, Practical Networking, a one credit class that met Monday through

Friday for three hours each afternoon.

The class was organized by **Randy Appleton** and taught by Intel Corporation personnel. John Webber, an engineering manager with Intel, taught students the practical parts of networking, including wireless routers, the programming behind it, and how it all interconnects to a network.

Networking theory and how networking standards are made was also discussed. Intel donated the routers used for the class as well as the textbooks.

Dr. Appleton said the students didn't seem to mind giving up their break to attend the class. Reviews by the students were positive and there are plans to offer the class again next year.

Department News continued from pg. 1

While there were opportunities to enjoy the unexpected, many of our accomplishments throughout the year were *expected* and should be recognized as the result of hard work and dedication on the part of many faculty and students of our department.

During the school year, seven faculty presented their research at conferences at home and across the country. In addition, several traveled extensively and presented their research: **Don Faust** in Indonesia, **Jeff Horn** in Spain, **Mike Kowalczyk** in the Czech Republic, and **Bao Truong** in Viet Nam, Chile, and Germany.

J.D. Phillips was part of a 14-member delegation from NMU that visited Israel and Turkey as part of a year-long study of the Middle East.

Carol Bell was invited to participate as part of a mathematics education delegation that traveled to India, sponsored by the People to People Citizen Ambassador Program.

Andy Poe accompanied 12 students from our department who competed in the ACM North Central North America Regional Programming Contest at Lake Superior State University in November.

Randy Appleton, David Buhl and **Bao Truong** along with 22 math and computer science students attended the 21st Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics at the Argonne National Laboratory in Argonne, Ill. Computer science majors **Michael Campfield,**

Charles Rye, Matt Knox and **Axel Cisluycis** also presented their research projects.

Andy Poe and eight computer science students traveled to Michigan Tech in April to participate in the BonzAI Brawl, an artificial intelligence programming contest sponsored by Women in Computer Science (WiCS).

In October, the Colloquium and Seminar Committee hosted the Regional Fall Meeting of the Mathematical Association of America (MAA). The two-day conference was a success due in large part to the hard work of professor emeritus **John Kiltinen**. Featured speakers included: Loren Graham (Prof. Emeritus, MIT), Jean-Michel Kantor (Institut Mathématique de Jussieu, Université Paris-Diderot) and Igor Kriz (University of Michigan). Speakers from Michigan Tech and NMU contributed 12 talks to round out the two-day conference.

Math and computer science students **Mike Campfield, Chris Weber, Elizabeth Momont** and **Alicia DeHart** presented their research projects at NMU's 2011 Celebration of Student Research and Creative Works in April. Alicia also presented her research project at the Undergraduate Mathematics Conference at Rose-Hulman Institute of Technology in Terre Haute, Ind.

Computer science majors **Nicole Ross** and **Axel Cisluycis** were chosen as the Intel interns for the 2011-12 school year. They will begin their internships this summer

at Intel headquarters in Hillsboro, Ore. The internships will continue in the fall on the NMU campus.

This year our department hosted 37 prospective students and their families who visited us through the campus visit program. The students met with various faculty who answered questions about majors and activities in our department and provided a tour of our labs and facilities.

Another successful Colloquium and Seminar Series wrapped-up in April after hosting 18 talks by six faculty, one emeritus faculty, nine students, three position candidates and two alumni.

As part of the McNair Scholars program, **Andy Poe** is now the official tutor for the Graduate Record Examination (GRE), which is considered the most widely accepted graduate admissions test. Andy meets with students weekly, prepping them for the verbal, quantitative and writing analysis portions of the test, as well as mathematics and computer science.

In addition to serving on in-house committees, ten faculty served on 17 NMU committees and boards during the 2010-11 school year.

Eight faculty authored or co-authored 21 research papers that were published in the form of journal articles, conference proceedings and online journals.

Thanks to everyone for another great year. I hope you enjoy a summer full of pleasantly unexpected surprises. I expect to!

E-mail us anytime at math_cs@nmu.edu or visit us at www.nmu.edu/math

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There are things which seem incredible to most men who have not studied mathematics - Aristotle

Did you know...

In the mathematics education program, students participate in elementary/secondary classrooms prior to student teaching. This hands-on experience gives students the chance to teach a lesson and interact with children so that they can directly apply the concepts learned in prior classes as well as in the methods course.

In both the elementary and secondary programs, students are afforded many opportunities to observe mathematics classrooms. During these observations, students can choose to teach a lesson, tutor students, or simply observe classroom management.

Also, secondary education mathematics students can complete their student teaching requirements locally, nationally and internationally. Internationally, students have completed student teaching experiences in New Zealand, Germany, and Ecuador. Popular student teaching placements within the United States include the metropolitan areas of Green Bay and Detroit. The diversity of the student teaching setting depends greatly on the interests of the student.

In addition to our bachelor of science in secondary mathematics education, we offer a master of science in mathematics education.