

# The Math Log

Newsletter of the University of North Dakota  
Mathematics Department

## UND Students Help with Flood Prevention Effort

The spring flooding season along the Red River of the North was unusually severe this year, but the recently completed permanent levee system around Grand Forks and East Grand Forks prevented any major threat to the two cities. The situation was much more precarious in other communities, however, and there was still some danger of flooding in certain isolated parts of Grand Forks. In order to allow UND students to help with flood prevention efforts, UND administrators canceled classes from noon on Thursday, March 26, through the end of the day on Monday, March 30. And students were not the only ones involved in the flood fight. Mathematics Department faculty and staff members **Gwenni Byron**, **Cheryl Halcrow**, **Joel and Michele Iams**, **Jerry Metzger**, and **Ryan Zerr** all contributed to the battle with the Red River in one way or another.

In the end, most dikes along the Red River held up well, and damage was minimal. We thank all of the UND students, faculty, and staff who volunteered their time and energy during the flood of 2009!

## Zerr Receives North Dakota Spirit Faculty Achievement Award

Mathematics faculty member **Dr. Ryan Zerr** has received a 2009 North Dakota Spirit Faculty Achievement Award. Approximately forty University of North Dakota faculty members received this award at the annual Founder's Day banquet here on the UND campus this past February. Zerr was the only Mathematics faculty member to receive the award. The North Dakota Spirit Award is given in recognition of significant contributions by faculty in the areas of teaching, research, and service. Congratulations to Dr. Zerr!



## Scholarships Awarded

The Mathematics Department has selected four students to receive special scholarships for the 2009-2010 academic year. The recipients are as follows:

- **Eric B. Timian** (Jay O. & Marie Bjerkaas Scholarship)
- **Danica R. Belanus** (Ronald C. & Ann C. Bzoch Memorial Scholarship)
- **Kirsten A. Hogenson** (Paige Plagge Memorial Scholarship)
- **Jacob R. Winkels** (Judy Ann Utton Memorial Scholarship)

We congratulate these four students for their awards, and we thank the generous contributors who have made these scholarships possible!

## Master's Degree Awarded

**Amy Borgen** received her M.S. degree at the end of the 2009 spring semester. Her adviser was **Dr. Michael Minnotte**, and the title of her independent study report was "Use of Variable Bandwidth in Determining Mode Behavior of a Kernel Density Estimation." On April 23, Amy presented a talk on her independent study work here in the Mathematics Department. This fall Amy plans to begin work toward a Ph.D. in statistics at Iowa State University.

## New GTA Joins the Mathematics Department

**Dewitt Johnson** has begun work as a Graduate Teaching Assistant here in the Department of Mathematics. Dewitt is pursuing a Ph.D. Teaching and Learning through UND's College of Education and Human Development. Dewitt earned a bachelor's degree in Electrical Engineer-

ing at North Carolina A&T State University in Greensboro, North Carolina. He also holds an MBA degree from La Salle University, in Philadelphia, Pennsylvania. Welcome to the Mathematics Department and to UND!

### Tom Clifford Dies

The Mathematics Department and the UND community mourn the loss of UND President Emeritus Thomas J. Clifford, who passed away on February 4, 2009. He was 87. Clifford served as UND president from 1971 to 1992. Rather than attempt to describe Clifford's contributions to UND in detail, we refer you to the various publications that you may receive from the UND Alumni Association. Additional information is also available in the February 11, 2009 issue of the *University Letter*, which is available on the Web at

<http://www2.und.edu/our/uletter>

### Former Mathematics Secretary Phyllis Hellem Also Dies

If you were a student here during the period from July 1967 to February 1982, you may remember Phyllis Hellem, who served as the Mathematics Department secretary during this period. Phyllis passed away on March 1, 2009, at the age of 81. Just as our current secretary, **Lona Spicer**, Phyllis was a very pleasant and helpful person. In a Mathematics Department history written in 1983, the late Mathematics Professor Emeritus **Woodrow McBride** says that "probably no department at UND ever has had a more efficient, pleasant and helpful secretary." We extend our sympathy to the family of Phyllis.

### Where They Are and What They Are Up To

**Candyce Hecker** (MS, 2008) lives in the Minneapolis area and is employed as an accountant with Cargill Trade and Structured Finance. She spends a lot of time working with numbers and complicated financial structures. This work involves interaction with people from all over the world, and Candyce says that it provides "a great opportunity to continue learning every day."

**Charley Huhtala** (MS, 2008) lives here in Grand Forks and teaches beginning, intermediate, and college algebra classes for Lake Region State College at the Grand Forks Air Force Base. Some of his children are current UND students, and Charley plans to stay in Grand Forks until they all graduate, if not longer.

Charley and his wife Wanda are starting up a square dancing group and are looking for new members.

**Katrina Nagel** (MS, 2007) currently teaches mathematics at Riverland Community College in southern Minnesota. The college has campuses in Austin, Albert Lea, and Owatonna, Minnesota. Katrina travels from campus to campus, but this travel varies from semester to semester. Katrina is very busy: This semester she is teaching college algebra, trigonometry, basic math, introduction to algebra, and intermediate algebra. Riverland is currently developing a pre-engineering program. If this program comes to fruition, Katrina may begin to teach more advanced classes. Katrina and her fiancé Eric are planning to marry in October.

**Dan Perlov** (MS, 2006) stopped by the Mathematics Department office on March 13, 2009. Dan is currently employed at a bank in Winnipeg. He is also doing some individual mathematics tutoring, and this tutoring work has become a very successful business. This fall Dan plans to enroll in a chiropractor training program.

**Dr. Halvor A. Udem** has recently concluded five years of work on international nuclear safeguards instrumentation for the International Atomic Energy Agency (IAEA) in Vienna, Austria. He is now returning to the Pacific Northwest National Laboratory in Richland, Washington, where he will continue to work in nuclear proliferation prevention.

### Department Hosts Annual Competition

Each year the Mathematics Department hosts the Mathematics Track Meet, a competitive event for selected students in grades seven through twelve from Grand Forks and the surrounding area. The 2009 Math Track Meet took place on February 16 and drew 184 student participants who took four individual tests and two team tests. The exams were followed by an award ceremony. We would like to thank Professor **Tom Richards** for organizing this year's Math Track Meet, as well as all of the Mathematics graduate students and current and retired Mathematics faculty and staff who helped prepare the exams and conduct the event itself. We also received help from many public school teachers in the Grand Forks area.

### Snyder Competes in Marathon Race

Mathematics Senior Lecturer **Jessica Snyder** competed in the Fargo Marathon on May 9, 2009. She ran 26.2 miles in four hours, four minutes, and fifty-four seconds. Congratulations on a job well done!

## Faculty Footnotes

**Dr. Cheryl Halcrow** has recently published the article “Hypatia: Mathematician and More” in the *Journal of the North Dakota Council of Teachers of Mathematics*. Cheri has also published “Fraction Division: We Can All Get It!” in the *Alabama Journal of Mathematics*.

The article “A congruence relation on a Hecke module associated with a quaternion algebra,” by **Dr. Shuzo Takahashi**, has appeared in the *JP Journal of Algebra, Number Theory and Applications*.

The North Dakota Experimental Program to Stimulate Competitive Research (ND EPSCoR) has awarded a 2009 Advanced Undergraduate Research Award (AURA) to **Eric Timian**. Eric will work on “Generalized Ducci Sequences” with faculty mentor **Dr. Ryan Zerr**, of the Mathematics Department.

### It’s a Boy!

**Isaac Soosung Hong** was born Sunday, December 7, 2008 at 7:00 p.m. He weighed 6 pounds and 17 ounces and was 21 inches tall. Isaac’s parents are **Doojin** and **E.J. Hong**. Doojin is an Assistant Professor here in the Mathematics Department. Both Doojin and E.J. hold Ph.D.’s in mathematics.

### Math Log Editor Talks with Sixth-Grade Teacher

If you have been reading the Math Log for the past few years, you have probably noticed several articles in which the editor has interviewed various graduates of the UND Mathematics program. Many of our students go on to careers in teaching, so I thought that it would be appropriate to talk to a teacher. One teaching major who immediately came to mind was **Katie (Bjerke) Doeden**.

Katie Doeden graduated from UND in 2003 with a double major in Mathematics and Elementary Education. She was a very good student. Katie was one of the top students in the geometry class I taught in the fall of 2001. She received the UND Mathematics Department’s 2002-2003 Paige Plagge Memorial Scholarship. During her college years, Katie was also active on the UND swimming team. She was named the University of North Dakota Female Scholar Athlete of the Year for the 1999-2000 and 2000-2001 academic years. (She was the only UND student to earn this particular award for either of these two seasons.) Katie was also named as a 2001-2002 Verizon Academic All-America Women’s College Division At-Large team member. More recently, Katie’s peer teachers nominated and selected her as the 2006-2007 Teacher



Katie Doeden

of the Year at the McLean 6th Grade Center in Fort Worth, Texas.

Even before learning about most of the above achievements, I was very interested in talking to Katie. After a little detective work, I soon located her. Katie currently lives in West Fargo, North Dakota. We had a visit over the telephone, in which we discussed her past experiences and achievements as well as some of her insights into teaching.

### The Pursuit of Mathematics

Katie Doeden grew up in Fargo, North Dakota. Her father was a physician in a hospital emergency room, and her mother took care of the house and the children. As far back as elementary school, Katie was interested in teaching. She says she liked to “play school.” She liked to read, but she did not feel that she was especially strong in any particular subject. In the eighth grade, Katie became more interested in teaching mathematics. She credits this change in large part to one of her teachers: **Mrs. Beth Thompson**, at Ben Franklin Middle School, in Fargo. Another teacher who influenced Katie was **Mr. Raymond Callaghan**, of North High School, in Fargo.

Katie enrolled at the University of North Dakota in the fall of 1998. One factor that may have contributed to her decision to come here was the fact that both of her parents and one of her grandparents had studied at UND. She says that “UND was always appealing.” Another factor that led Katie to UND was the school swimming team. Although she did not have an athletic scholarship, Katie joined the UND swimming team and participated in various freestyle swimming events, eventually earning the awards noted above.

Katie graduated from UND in the spring of 2003 with a double major in mathematics and elementary education. She married her husband Andy Doeden in the summer of 2003. Andy was interested in becoming a professional golfer, and this led Katie and Andy to Phoenix, Arizona. Katie worked as substitute teacher in Phoenix until the couple moved to Fort Worth, Texas, in January 2004. Katie did more substitute teaching and soon decided that she enjoyed teaching at the middle school level.

### **Sixth-Grade Teaching**

In the fall of 2004, Katie began work as a permanent teacher at the McLean 6th Grade Center in Ft. Worth. I had many questions about Katie's teaching there. The McLean Center is part of the Ft. Worth public school system and was devoted exclusively to sixth-grade instruction. Students in other grades attended a middle school a block away. Katie's students came from a wide range of ethnic and economic backgrounds. Each teacher at McLean specialized in a particular subject, such as mathematics, English, science, social studies, etc. Students moved from room to room throughout the day. Katie taught mathematics. For the first few years, she taught in a more traditional way. In the fall of 2007, however, the school implemented a new mathematics curriculum, called "Connected Mathematics," which was developed primarily at Michigan State University. Katie says she enjoyed using this curriculum very much.

Connected Mathematics is a "cooperative learning" curriculum. When many of us attended school, the teacher usually stood up in front of the class and explained the subject. With the Connected Mathematics curriculum, however, Katie would begin a typical class period by posing a problem. Students would then work on the problem in pairs. Each student would have a "seat partner." As the students worked, Katie would walk around the room and provide hints as necessary. Students in one pair would often start working with another pair of students, so that four would be working together.

After twenty to thirty minutes, students would stop their individual work, and the class would discuss the problems together as a group. Every six to eight class days, Katie would give the students a "check-up" quiz, and she would also have the same types of occasional exams that nearly all of us are familiar with.

Katie felt that the cooperative learning method of Connected Mathematics was very effective. The students showed more interest in learning than they would show in more of a lecture-format class. But Katie added that the new curriculum required more work on her own part.

Every year, Katie's students had to take a Texas state exam. This meant that she had to be sure to cover a certain minimum set of topics. Sometimes this was an inconvenience. Sometimes she would be teaching a set of topics that seemed very interesting to her and to the class; but in order to cover all of the topics required by the state exam, she would have to abandon a particular topic and move on to something else.

### **Horror Stories**

Most of us have heard horror stories about what can happen in public schools in the U.S.: drugs, violence, gang activity, teachers having to act as both a substitute parent and a police officer, etc. Katie says that a few of these things did in fact occur at McLean, but the problems she experienced were all relatively minor. For example, some students occasionally drew gang symbols on their folders, but it was mostly older siblings who actually joined gangs. A few students had problems at home, but Katie says that McLean had a very good counselor who helped out in these situations. Katie pointed out, however, that there were other schools in Ft. Worth which did experience more serious problems with students.

### **Hints for Successful Teaching**

I asked Katie for her thoughts on what it takes to be a successful teacher. One of the first things she said was that the teacher needs to be enthusiastic. The students will not be interested in learning unless the teacher is interested as well. Katie also feels that the teacher needs to give the students a sense of confidence in themselves. When Katie's students took the Texas statewide exams, they needed to approach these exams with a sense of confidence.

I brought up the question of mistakes. (If you have ever taken a class from me, you probably know that I make mistakes once in a while myself!) Katie says that mistakes on the part of the teacher show that we are all human. Sometimes she would deliberately make mistakes! She emphasized that the teacher should teach the student how to learn from his or her mistakes.

Katie also said that it is important for the teacher to show some interest in the lives that students are leading at home. She said that her students often wanted to tell her about things they were doing outside of school. When the teacher is interested in the students, then the students are more likely to be interested in learning.

When Katie started at McLean School, she was one of the youngest teachers. She said that at various times during the day she talked with her more experienced colleagues, both informally and at more formal meet-

ings, and that she gained valuable insights from these conversations.

In the end, Katie said that one can only learn so much about teaching by taking courses on teaching. She says that until you have full responsibility for teaching a class, you won't know what teaching is really like.

### Current Plans

Last summer, Katie and her husband Andy moved back to North Dakota. Andy works for a company based in Fargo, and he felt that it would be more practical to have daily face-to-face contact with his colleagues in the Fargo office.

In September of 2008, Katie and Andy had their first child. Katie currently stays home and takes care of her new daughter, Claire, but she hopes to return to teaching within a few years. She realizes that she may have to take a few courses in order to obtain certification for the type of teaching she would like to do here in North Dakota. If this is necessary, she is interested in taking those courses at UND!

I wish Katie the best of luck in her future endeavors, and I hope that she keeps us posted on her activities. I also hope that her stories give you some insights into the world of teaching!

### The Pseudo-Sum

By Larry Peterson



Most of us are very much aware of the economic crisis that is currently impacting the US and many other countries around the world. One especially critical effect of this crisis is, of course, the loss of jobs, so I thought that it might be a good time for me to use this Pseudo-Sum column to express some of my thoughts on the topic of job hunting. I think that this topic is indeed appropriate for the *Math Log* and the Pseudo-Sum. After all, part of the mission of the Mathematics Department is to prepare students for the world of work. Although many of you may not have been students for several years, at least not formally, job hunting may still be a very important topic for you. If you do not plan to look for a job in the near future, you may still have to provide advice and encouragement to someone who *is* looking for a job; perhaps this Pseudo-Sum will help you start thinking about what to say to such a person!

Even if I were a true expert, of course, I could not do justice to the subject of job hunting in the space available here. But I *can* go over a few very basic points that I have learned from other people, from reading books, and from my own experiences. My first suggestion to the job-seeker is to get a fairly recent book on job hunting, either from a bookstore or from a library. Some job-hunting books are comprehensive, while others focus on a single aspect of job hunting, such as writing a resume or a cover letter or actually interviewing for jobs.

Another piece of advice is to take advantage of career centers and job placement services. UND has a Career Services office. You may be able to take advantage of some of its services even if you do not live near Grand Forks. A first step might be to check the Career Services Web site:

<http://www.career.und.edu>

This Web site contains information on resumes and cover letters, how to interview for a job, how to find job openings, and other aspects of the job search.

If you develop a resume, do so carefully! Do not make any spelling errors! Make your resume attractive and easy to read. Use a computer, word processor, and laser printer. Before you actually use your resume, have a professional career counselor or a friend take a look at it and criticize it. Do not feel insulted if your reviewers criticize you! If something in your resume looks bad to the career counselor or to your friends, then it may very well look bad to potential employers as well! Do not feel that you must follow all of the advice you receive, but bear in mind that your objective is to write a resume that will make you look attractive to employers. Your goal is to "sell yourself"!

If you apply for jobs through the mail, you will no doubt send a cover letter along with your resume. In your cover letter, try to explain the type of job you are looking for, and highlight some of your qualifications for the job. Employers are probably looking at many applications, so try to write a cover letter that makes you stand out from the crowd.

Once you have developed your resume and a rough draft of a cover letter, the next step in finding a job is to apply. There are always job openings listed in the newspaper, and you can also look for job openings at an employment agency. Many jobs openings are posted on the Internet. But the conventional wisdom is that jobs are often obtained through personal connections and "networking." Tell your friends that you are looking for work. If an employer hears about you through a friend, you may have an advantage over other applicants.

With a little luck, you will soon be interviewing for jobs. Try to prepare for each interview by learning as much as you can about the employer and the job itself. If you have a resume, bring a few extra copies to the interview. Be ready to answer questions about yourself and to ask questions about the job and its duties. If by chance you are in some way unprepared for the interview, do not *apologize* for this. An apology only draws attention to the fact that you are unprepared.

Be pleasant and positive. Try to avoid complaining about your past jobs. Make it clear that you enjoy working with other people! Unless you are applying for a job as the janitor on the night shift, you will probably be working in some sort of group setting.

Throughout most of the interview, it is probably best if the conversation focuses on the job in question and the needs of the employer. But don't be afraid to tell about yourself and the things that you are looking for in a job. In the long run, both you and your employer will no doubt be much better off if you find a job in which you are truly interested; and a good interviewer will understand this.

Even if you follow all of the standard job-hunting practices, of course, you may still have trouble finding the job you are looking for. One piece of advice I would have in this situation might be summed up with the

phrase "When opportunity knocks, answer." Circumstances may force you to take a job which is not quite what you are looking for. You may have to move to a different community in order to find work. Perhaps an opportunity for self-employment will arise. Or maybe a temporary job is the only available employment. Temporary jobs are quite common in the academic world, but many jobs in other fields are temporary as well. Temporary jobs are not all bad. They may provide you with valuable preparation for other jobs later on.

What if no opportunity knocks at your door? Experts often say that job hunting is a full-time job. Keep trying! If you are unemployed, spend several hours each day on things related to your job search. If this eventually becomes impossible, however, then my suggestion would be to at least find some constructive way to spend your time. Consider doing some volunteer work, taking a class, or even devoting some time to reading books. Try not to get discouraged. Find a supportive person who may provide advice and an encouraging word. You will no doubt find employment eventually. But it might take some time, and the job you finally land might not quite meet your expectations. In any case, when you are finished, you may find that you have gained some very valuable knowledge and experience from the time and energy you have devoted to your job search!



### University Place Apartments

Within the last couple of years, UND has constructed some new student housing. The University Place student apartments are located on the south side of University Avenue, just west of the Chester Fritz Auditorium and the English Coulee. View this photo in color on the Web at <http://www.und.nodak.edu/dept/math/mathlog>!

## THANK YOU !!

The following persons are responsible for monetary gifts to the UND Alumni Association specifically designated for the improvement of the Department of Mathematics:

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Your teachers and friends are wondering what you are doing! Help us to satisfy their curiosity! (Photos are also welcome.)

NAME (Include previous if changed.): \_\_\_\_\_

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