

2011

The Wright Message, 2011-2012

University of Northern Iowa. Department of Mathematics.

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2011-2012
DEPARTMENT OF MATHEMATICS

THE WRIGHT MESSAGE

Dear Department Alumni and Friends,

We are pleased to bring you the 2011 edition of the Wright Message, the annual newsletter of the Department of Mathematics. The newsletter is our medium for sharing with you the most important news and developments of the last academic year. We hope you will find it informative and fun to read. As always, we welcome your feedback and comments, so please let us know how we are doing.

The condition of the department remains strong in spite of the tough fiscal challenges we have faced in the last several years—the result of the weaknesses in the broader economy. Our students, faculty and staff continue to excel (do great work) on many fronts. The faculty continues to insist on rigorous curriculums and the highest possible standards, and our students are meeting our expectations, even as more of them engage in paid employment to pay the increased costs of an education.

“Our faculty continue to deliver first-rate instruction, which is not only relevant and up-to-date, but also aligns with national trends.”

Our faculty continue to deliver first-rate instruction, which is not only relevant and up-to-date, but also aligns with national trends. To that end, the mathematics education faculty undertook an extensive curriculum revision of the mathematics education graduate programs and similarly extensive curriculum revisions of all our undergraduate programs are planned for the coming academic year. Thanks in part to the support of friends and

alumni like you, some of our faculty are engaging our undergraduate students in research and are taking the students to present their work at professional conferences. Our ultimate goal is to transform the departmental culture into one in which undergraduate research is an essential, rather than ancillary, part of what we do. Our actuarial program students are passing the Fellow of the Society of Actuaries (FSA) and Fellow of the Casualty Actuarial Society (FCAS) exams at significantly higher rates than the national average rates. Some of our faculty are involved in international research collaborations and are increasing the department's visibility on the global scene.

Perhaps the most far-reaching achievement of the department in the just-ended academic year, in terms of scope, reach and potential impact, was the adoption by UNI of the Assessment and Learning in Knowledge Spaces (ALEKS) placement

examination. The goal is to have all freshmen and transfer students take the placement exam before matriculating into UNI in order to check their readiness for the mathematics courses they intend to take. The ALEKS placement examination is only a placement tool and is not intended to have any impact on either UNI admissions standards or acceptance of transfer credit. In particular, the examination has no effect on the articulation agreements between UNI and community colleges.

It should be noted that all three Board of Regents universities have adopted the ALEKS placement examination. Our objective in adopting the test is to address the unacceptably high D, F or withdrawal rates in math courses and increase retention and graduation rates. More information on the ALEKS placement test can be found at <http://www.uni.edu/orientation/freshman/math-placement/>.

Even in good times, the department depends heavily on the generous support of our alumni and friends. The distressed economy in the last few years has left the department in even greater need. On behalf of the department, I wish to extend our very sincere thanks to the alumni and friends who made contributions to our foundation accounts in the past year. In total, we received \$135,595 between July 1, 2010, and June 30, 2011. Most of the money goes to fund scholarships, but some goes to accounts that cover other expenses (equipment, faculty and student travel, etc.). We are appealing for your help again this year. If you are able to, please use the enclosed form to direct your contribution to the appropriate account. Again, thank you for your support.

I hope this past year has been good to you and that the coming year will be even better.



Douglas Mupasiri, Professor and Interim Head

Around Wright Hall

• Two faculty members were promoted from assistant to associate professor. Congratulations to **Dr. Shangzen Luo** and **Dr. Brian Townsend**.

• **Dr. TJ Hitchman** was awarded a Pre-Tenure Fellowship from the Provost's Office to support his project, "Harmonic Maps into Infinite-Dimensional Spaces with a Vector-Bundle structure" during the month of June.

• **Dr. Jihwa Noh** has been awarded a Professional Development Assignment for the fall 2011 semester with a research project, "Where Do Secondary Mathematics Teachers Gain the Mathematical Knowledge Needed for Teaching?" She will spend her sabbatical semester at her undergraduate university in South Korea teaching collaborating on research.

• Dr. Jihwa Noh was also selected as one of the 2011 Community Engagement Award recipients. Initiated in 2006 by the Veridian Credit Union, the awards recognize the "outstanding contributions of UNI faculty to the greater community." Up to five awards are made to individuals from UNI's five undergraduate colleges. Noh has been active in building relationships with schools and mathematics teachers in Cedar Falls and Waterloo Community School Districts. She donated the award money to Waterloo West High School where she and her methods students offered a weekly after-school mathematics club last fall.

• **Dr. Adrienne Stanley** and **Dr. Suzanne Riehl** joined 857 colleagues to grade 342,593 AP Calculus exams in June. These exams, consisting of both multiple choice and free response questions, are taken by high school students. Many colleges, including UNI, give

credit for one or two semesters of calculus based on these results.

• Congratulations to **Dr. Vicki Oleson** who completed her Doctor of Education degree from the Department of Curriculum and Instruction. She was promoted to assistant professor.

• **Dr. Hitchman** has assumed the post of chair of the Iowa Section of the Mathematical Association of America after serving as vice-chair and organizing a successful section conference in 2010. One area of Hitchman's effort has been serving on a steering committee to hold a joint section meeting with the Missouri, Kansas and Nebraska-SE South Dakota sections in the spring of 2013.

• The faculty continue to invite people from academia as well as industry to visit the department, interact with students and collaborate with faculty. Recent visitors include **David Spicher** (The Boeing Company), **Professor Greg Lewicki** (Jagiellonian University, Poland), **Professor Michael Taksar** (University of Missouri-Columbia) and **Professor Jean-Yves Dauxois** (University of Franche-Comte, France).

• The department faculty is extraordinarily active in publishing high quality research work in reputed periodicals, presenting papers in national and international conferences,

serving as reviewers and editors, consulting with both on-campus and off-campus entities and in supervising the research work of our own students. In the last year alone, the mathematics faculty has published over 20 research articles and presented 28 papers at professional meetings. **Dr. Bin Liu** presented at two international conferences. **Dr. Michael Prophet** attended conferences/workshops in Jaen, Spain and Kiev, Ukraine. **Dr. Syed Kirmani** gave invited graduate lectures on statistical quality control at the Ecole Nationale de la Statistique et de l'Analyse de l'Information (ENSAI), Bruz, France, in November 2010.

• As part of our efforts to promote an awareness of mathematics in the general public, we continue to have the annual Hari Shankar Lecture. This year's Hari Shankar Lecture was delivered by **Dean Joel Haack**. His talk, "These Are a Few of My Favorite Things," was enthusiastically received by a large audience mainly consisting of non-mathematicians!

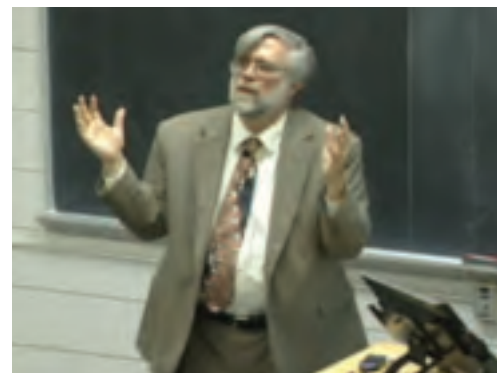


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Updates in the Department of Mathematics & the College of Humanities, Arts and Sciences

New College

UNI has a new college! The College Natural Sciences (CNS) and the College of Humanities and Fine Arts (CHFA) have merged to form the College of Humanities, Arts and Sciences (CHAS).

Dr. Joel Haack, former head of the Department of Mathematics, has served as dean of CNS, then as dean of both CNS and CHFA and is now the dean of CHAS.

Programs Revision

Last fall, the mathematics education graduate programs were revised to bring better coordination and coherence to the different emphases. The revision involved creating common courses for all emphases, creating a

new emphasis with a community college teaching focus and reinforcing the cohort structure in the secondary teaching emphasis.

Math ≠ 800

There is a new Student Information System at UNI. Among other things, the system updates and improves record keeping, tracking and data collection across campus.

A visible change—all the courses on campus have been renumbered. Gone is the “800” department number designation, replaced by the more descriptive labels, MATH, STAT and ACT SCI. Also gone are the three digit course numbers which have been replaced by the more intuitive four-digit course numbers – with the first digit denoting the year.

Baumler Mathematics Education Scholarship

Conrad ('73 M.A.-Business and '71 B.A. Mathematics) and **Jeannette Baumler** ('73 B.A Accounting and Mathematics) of Cedar Rapids have recently made a gift to the Department of Mathematics to create the Conrad and Jeannette Baumler Mathematics Education Scholarship.

The annual scholarship will be given to a junior or senior majoring in mathematics education. The Baumlers understand how important a superior mathematics education is. They also know that many of today's graduates are finishing their education with considerable college loan debt that must be paid back.

The Baumlers decided to provide scholarship support in an effort to help defray college expenses for future mathematics educators. The first recipient of the Baumler Mathematics Education Scholarship is Andrew Skinner.

There is a lot of Panther pride in the Baumler family as several of Conrad and Jeannette's siblings are graduates. The Baumler's two children, as well as their son-in-law, are also graduates of the University of Northern Iowa.

Conrad and Jeannette are active and loyal UNI alumni. They both served on the UNI Parents' Board, and Conrad is a long-time member of the College of Humanities, Arts and Sciences' Advisory Board.

Jeannette is employed in the finance department at St. Luke's Hospital in Cedar Rapids, and Conrad has just retired as CFO following 35 years with Shive-Hattery, an architectural and engineering firm in Cedar Rapids.

Two Retire

Dr. Diane Thiessen

Dr. Diane Thiessen joined the faculty in 1978. She was a key player in designing and maintaining both the minor in mathematics—teaching (K-8) and the mathematics for the middle grades master's program. She consulted for the Iowa Department of Education, wrote textbooks and served on numerous national, state and local committees.

Thiessen also—nearly single-handedly—developed, organized and maintained the Math Ed Lab in Wright Hall (see the article, “Math Ed Lab - Then and Now” on page 6). We will miss her dedication to teaching and her determination to keep the conversations about what is best for students going among mathematics education faculty.



Dr. Jack Wilkinson



Dr. Jack Wilkinson joined the faculty in 1962. During his long career, he taught mathematics education courses, served on numerous committees at all levels, directed major pre-service and in-service teacher development projects funded by the National Science Foundation and the Department of Defense Education Agency and was active in both the local community and in the education community. We will miss Jack's knowledge bank—his extensive list of contacts, history and how things get done.

We celebrated the careers of Diane and Jack on May 15 with a reception in the UNI Commons. Best wishes to both on their retirements!

Putnam Exam

UNI Mathematics participated in the 71st Annual William Lowell Putnam Exam on December 4, 2010. This is a prestigious, and famously difficult, team competition for Colleges and Universities in the United States and Canada. This year there were 4,296 contestants from 546 colleges. Our team was **Genevieve Becicka, Wes**

Keene and **Joe Winder**. The students wrestled with six different problems in each of two three-hour exam blocks. **Professor Hitchman** was the team sponsor as well as the team coach.

As an example, here is a problem the team felt they did well on: There are 2010 boxes labeled $B_1, B_2, \dots, B_{2010}$ and 2010_n balls have been distributed among them, for some positive integer n . You may redistribute the balls by a

sequence of moves, each of which consists of choosing an i and moving exactly i balls from box B_i into any one other box.

For which values of n is it possible to reach the distribution with exactly n balls in each box, regardless of the initial distribution of balls?

Math Ed Lab - Then and now

Courtesy of Diane Thiessen

In 1978, the resources for the math education classes were stored in a locked closet on second floor, and it was a small closet. Across the hall was a small room lined with shelves and cupboards for books and additional resources. The large table in the room was the location for help sessions; it was also an outer office as both Diane Baum and Jack Wilkinson had offices that opened into this room.

Convenient? No! I remember one September afternoon carrying a large box of base-ten blocks up two stories to a tiered classroom with desk chairs. The open windows did not give relief to the 90-degree temperatures. After discussing homework, rearranging students into pairs and distributing the materials the students balanced on the arms of their desks, there was insufficient time to complete the activity. So, the materials were collected and returned to the closet.

Later that spring, a plan was devised for a "Math Ed Lab." By the next fall a large classroom was secured for the math methods courses. Bookcases for our resources separated the back of the room from the rest of the classroom. Long tables were secured where the students still sat in rows but at least they had space to work. When Wright Hall was remodeled, the materials were moved to Sabin, then to Old Aud (now Lang Hall) as the Department of Mathematics was in temporary quarters for a year and a half.

As a member of the Planning Committee for Remodeling Wright Hall,

Diane Baum included plans for the current Math Ed Lab in Wright 209. The new room was set up like a library with study tables surrounded by resources. The Math Ed Lab has abundant shelf and storage for the many resources obtained through contributions and grants such as PEMST and IMSEP. On both ends of the room, doors open to adjoining classrooms furnished with tables for small group work. Resources now are easy to access and transport, making it easier for students to effectively use them in their classes. Undergraduates work as Math Ed Lab assistants to conduct help sessions and maintain Wright 209. Resources vary

from tools such as scissors and rulers to manipulatives such as base-ten blocks and algebra tiles to MIRAs and polydrons. Print resources include NCTM publications, K-12 textbooks including standards-based ones and other resources to support effective teaching.

These materials support our elementary and secondary programs—both undergraduate and graduate programs—and are used on a daily basis in our classrooms as well as by UNI students for participations and tutoring.

You are invited to stop in and browse the collection.

2011-2012 Tenure-Stream Faculty

The following is a list of the tenure-stream faculty of the Department of Mathematics for the 2011-12 academic year:

Russell Campbell

Mark Ecker

Joel Haack

Theron Hitchman

Elizabeth Hughes

Syed Kirmani

Min Lee

Larry Leutzinger

Bin Liu

Shangzhen Luo

Catherine Miller

Douglas Mupasiri

Glenn Nelson

Jihwa Noh

Vicki Oleson

Olena Ostapyuk

Michael Prophet

Edward Rathmell

Suzanne Riehl

Karen Sabey

Doug Shaw

Nikolay Silkin

Marius Somodi

Adrienne Stanely

Olof Steinhorsdotter

Brian Townsend

Mathew Webb

Bill Wood



Some of the 2010-11 Math graduates pictured with Douglas Mupasiri, Professor and Interim Head, on graduation eve.



Making an Impact

Marilyn Hala, ('59 B.A. Mathematics Education) of Reston, Va., has supported the Department of Mathematics with annual gifts for more than 25 years. She gives special credit to mathematics professors Dr. E.W. Hamilton and Dr. Fred Lott for encouraging her career as a mathematics educator. Marilyn says she

used them as examples of how students should be treated and supports the department's scholarships in their names as a way to recognize the impact their teaching and encouragement made on her.

Marilyn's first math teaching position was at Columbus High School in Waterloo, Iowa. She also taught

at West High in Davenport, Iowa. After receiving her master's degree from the Pennsylvania State University, she taught at their Shenango Valley campus. From Pennsylvania, Marilyn moved to South Dakota to teach at St. Francis Indian School. She established a math lab at that school.

After serving as mathematics director for the State of South Dakota, Marilyn

worked until her retirement at the National Council of Teachers of Mathematics (NCTM) where she was the professional programs director.

Marilyn enjoyed regular contact with UNI's mathematics education faculty during her tenure with NCTM. She assisted in writing the professional teaching standards. Members of the UNI mathematics education staff were on her writing team.

Additionally, Marilyn served as staff liaison for a committee which wrote National Science Foundation grants related to mathematics education research. UNI mathematics education staff were selected to complete the work of these proposals. Marilyn admits, "Yes, I was a brain-picker of UNI staff!"

In addition to her annual support, Marilyn has also included the Department of Mathematics Program Fund with a planned gift.



"The essence of mathematics is not to make simple things complicated, but to make complicated things simple." - S. Gudder

The Question

Courtesy of Doug Shaw

Mathematics is the sister, as well as the servant, of the arts and is touched with the same madness and genius.

- Harold Marston Morse

For the last eight years, I've directed a small comedy troupe, composed mainly of UNI students and alumni. We've been fortunate enough to have gotten attention from local press, often including interviews. And although the newspapers and reporters change, one question remains the same: "Tell me a bit about your performances." Hahaha! Just kidding! The questions I really get are variants of: "Tell me, why is a math professor involved with the arts?" Are you surprised? Should you be surprised?

Mighty is geometry; joined with art, resistless. - Euripedes

A friend of mine is a good artist, and she had an art show. When she was asked about her interests, she mentioned math. The reaction was often the same. Nobody was crass enough to say it out loud... "Tell me, why is an artist interested in math?" but the sentiment was unmistakable. "Left-brained" / "Right-brained." "Math people" / "Arts people". Everyone gets their box, and as long as we all stay where we are supposed to be, nobody has to feel bad about not wanting to stretch.

Music is the pleasure the human soul experiences from counting without being aware that it's counting.

- Gottfried Leibniz

We don't have to go to celebrities like Teri Hatcher, Danica McKellar, Art Garfunkel, David Dinkins, Lewis Carroll, Carl Rowan, Larry Niven and Omar Khayyam to find examples of "math people" with an interest in theater, music, politics and writing. We can look around in our own department.

Dr. Stanley plays the cello for the Waterloo-Cedar Falls Symphony. Dr. Campbell dances with International Dance Theater. Dr. Haack has written many papers about connections between mathematics and the arts. People in our department have served on the board of support groups for the arts and been generous donors to many arts-oriented organizations. If you go to any theater, music, art or dance venue in Cedar Falls or Waterloo, I'll bet you one of Dr. Prophet's pianos, that you run into one of us there.

Some stereotypes are based in truth, which still doesn't make them okay. But the idea that math professors don't like, support or participate in the arts has no such basis. The "left-brain" / "right-brain" theory has been debunked by science and is refuted by the professors in our very department. Next time I get the question: "Tell me, why is a math professor involved with the arts?" I'm going to answer, "You tell me, why not?" If you have a better answer, please share it!

Spotlight on Undergraduates

Genevieve Becicka

Genevieve Becicka completed a year-long independent research project, "Equivalent Representations of Standard Young Tableaux" under the direction of Professor Hitchman. She presented her work with a poster at the University of Nebraska's Undergraduate Women in Mathematics Conference, the Iowa Board of Regents Research in the Capitol Event in Des Moines and the Midwest Undergraduate Mathematics Symposium at Simpson College. She scored 10 points on this year's Putnam Exam. This places her in the top third of 4,296 contestants.

Kyle Pitzen

Kyle Pitzen completed a year-long independent research project, "Products of NPC Metric Spaces" under the direction of Professor Hitchman. Kyle presented his work with a poster at the Midwest Undergraduate Mathematics Symposium at Simpson College.

Wes Keene

Congratulations to **Wes Keene** for scoring 20 points on this year's Putnam Exam. This places him in the top 900 out of 4,296 contestants. More information about the Putnam Exam can be found on page 5.

mathematics content. It also develops professional development modules designed to increase content knowledge and improve pedagogy for elementary school teachers.

Vicki Oleson directs the projects at the center. These projects involve thirty innovative educators and consultants from the University of Northern Iowa, Iowa Area Education Agencies, school districts and other agencies across the state. The center currently serves military families worldwide and teachers in the state of Iowa via three major projects:

- Development of *Making Sense*, online video and supplementary resources, for Project SOAR (Students Online Achievement Resources). UNI partners with The Princeton Review, US Skills and Military Impacted Schools Association to provide mathematics and literacy educational resources to military parents. The *Making Sense* videos and supple-

mentary resources are available at <http://www.makingsenseonline.org>.

- Creation of *Making Sense* professional development mathematics courses. Current topics include number and operation, geometry and measurement as well as data and algebraic thinking for elementary classrooms.

- Facilitation of *Making Sense of Mathematics and Teaching* professional development courses for sixty teachers in southwest Iowa.

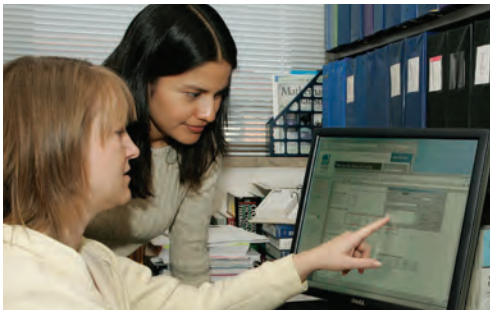
Projects and Grants

Invisible to most students, but an integral part of the department, is our work on grants and projects. These activities extend the reach of our faculty and allow us to impact the study of mathematics beyond our campus.

Dr. Theron Hitchman will be participating in the Undergraduate Teaching in Mathematics with Open Software and Textbooks (UTMOST) project for the next few years. This is a National Science Foundation grant-

funded project across several colleges geared toward integrating the open-source computer algebra system (SAGE) into mathematics coursework. He will be focusing on incorporating visualizations and data-heavy projects into linear algebra courses.

The Center for Teaching and Learning Mathematics received grants from the Department of Defense and from the Iowa Department of Education. The center develops online educational products designed to help parents and children develop deep conceptual understanding of literacy and



P.S.M. Program in Industrial Mathematics

The Professional Science Master's (P.S.M.) Program in Industrial Mathematics has a new degree option in Actuarial Science. The objective of this option is to build on the success of our undergraduate actuarial science program and provide an opportunity to graduate students to prepare for leadership roles in the actuarial profession.

In addition to actuarial course work, the P.S.M. degree requires an internship followed by a semester long, in-depth development/research/study of the internship project or a closely related topic. Business courses to supplement the required "Business Management for Science Professionals" course are strongly encouraged. The P.S.M. requires a completion of 34 units of coursework. The actuarial science track of the P.S.M. started in Fall 2010 with four students.

Samantha James and **Sarah Miesner**, P.S.M. (Actuarial Science) students, recently spent a month at the Ecole Nationale de la Statistique et de l'Analyse de l'Information (ENSAI) in Bruz, France, during which period they had an intensive course in Statistical Methods in Finance. Samantha and Sarah had a great time at ENSAI and later enjoyed Paris, London and Dublin.



Actuarial science alumna, Erin Elizabeth Conrad, pictured before her induction ceremony into the Society of Actuaries.

Actuarial Science Alumni

Actuarial science alumni who have attained the Fellow of the Society of Actuaries (FSA) or the Fellow of the Casualty Actuarial Society (FCAS) status during the period from May 2009 through June 2011, include the following:

Kenneth Wayne Doss, B.A. (2005), FCAS (May 2009)

Jason A. Flick, B.A. (2001), FCAS (May 2009)

Jake L. Ferguson, B.A. (2007), FSA (June 2009)

Steven Mitchell Huppenbauer, B.A. (2005), FSA (June 2009)

Adam M. Jarvela, B.A. (2004), FSA (December 2009)

Benjamin Steward Wadsley, B.A. (2004), FSA (March 2010)

William Joseph Freese, B.A. (2007), FSA (March 2010)

Andrew Donald Quint, B.A. (2007), FSA (September 2010)

Justin D. Knight, B.A. (2003), FSA (December 2010)

Elizabeth Ann Nanke, B.A. (2006), FSA (December 2010)

Erin Elizabeth Conrad, B.A. (May 2008), FSA (June 2011)

Congratulations to all of them and to other alumni whose names we may have inadvertently missed. We are proud of you. Please write to us, as and when you get the time.

Department of Mathematics Contribution Form

We truly appreciate the support that you give to the Department of Mathematics. You may use this form to direct your gift to the area of most importance to you. If you prefer, you may give via the UNI Foundation secure website: www.uni.edu/math. Use the "Donate to Mathematics" button on the right side. This will take you to a secure site with three mathematics funds choices. Please enter your donation amount in the boxes, or click "Take me directly to the giving page" to contribute to any other project (enter the project name or gift intention in the area marked "Please specify designation" in the "Other" category). **Thank you!**

\$ _____ **Mathematics Department Quasi-Endowed Fund** (provides Alumni Scholarships, faculty development and travel, equipment and support for all programs) 20-220127

\$ _____ **Mathematics Education Leadership Endowed Fund for Excellence** (discretionary fund for all mathematics education programs in the UNI Department of Mathematics) 30-221015

\$ _____ **Actuarial Science Fund** (provides John E. Bruha Award in Actuarial Science, non-endowed scholarships and covers student fees on successfully completed actuarial exams) 21-221288

\$ _____ **Mathematics Leadership Fund** (for the enhancement of teaching secondary mathematics) 21-221162

Additional funds, established by alumni and friends, provide scholarships to students in our programs. These scholarships are described on the back of this page.

\$ _____ directed to _____

Name (s) _____ Email _____

Home Address _____ Phone (home) _____

City, State, Zip _____ Phone (work) _____

Please check if different than addressed.

My (or my spouse's) company, _____ (name), will match my gift.
(Please contact your HR office for details and matching gift form to be submitted with payment.)

Type of Payment:

Check: enclosed, payable to the UNI Foundation

Credit Card: please charge my card

\$ _____ beginning (mo/yr) ____/____

Please complete card information below.

Signature (required) _____ Date _____

Return to UNI Foundation, Attn: Financial Services, 1223 W 22nd Street, Cedar Falls, IA 50614-0239

100340

Credit card information will not be kept on file.

Charge my: VISA MasterCard Discover American Express (please check one)

Card Number: _____

Expiration Date: _____

Department of Mathematics Funds

The following funds and scholarships are named for UNI emeritus faculty members:

- **Diane Sorenson Baum Fund** – scholarships for elementary education majors with a K-6 mathematics minor (21-210591)
- **E.W. Hamilton Quasi-Endowed Scholarship** – scholarships for students enrolled in any mathematics program (20-210174)
- **Fred W. Lott Endowed Scholarship in Mathematics** – scholarships for incoming freshmen who are mathematics majors (30-211124)
- **Michael H. Millar Endowed Scholarship** – scholarships to graduate students (30-211718)
- **Augusta Schurrer Endowed Scholarship for Mathematics Excellence** – scholarships for students majoring in mathematics – teaching (30-211292)
- **Carl and Wanda Wehner Math Teaching Endowed Scholarship** – scholarships for juniors or seniors majoring in mathematics – teaching (30-210474)

The following funds have been established by alumni and friends of the Department of Mathematics:

- **Conrad and Jeannette Baumler Mathematics Education Scholarship** – scholarship for juniors or seniors in mathematics education (21-212506)
- **Robert W. Bettie Math Education Scholarship Endowment Fund** – scholarships for seniors in mathematics education (30-211269)
- **Irvin and Dorothy Brune Mathematics Education Endowed Scholarship** – scholarships for incoming freshmen mathematics education majors (30-211613)
- **Robert and Carol Hendrickson Crane Scholarship in Secondary Math Education** – scholarships for juniors or seniors in secondary mathematics education (21-212418)
- **John F. and Ruth Cross Endowed Scholarship** – scholarships for statistics and actuarial science majors (30-211516)



- **Rich and Dee James Secondary Mathematics Teaching Endowment** – scholarships for juniors or seniors in mathematics education (30-212220)
- **Patricia Lange Memorial Endowed Math Scholarship** – scholarships for students in any mathematics major (30-210976)
- **Marian Rigdon Ponder Math Education Scholarship** – scholarships for incoming freshmen mathematics education majors (21-212206)
- **Marcia E. Traer Endowed Scholarship Fund** – scholarships for juniors or seniors in any mathematics major (30-211199)
- **Mathematics Undergraduate Research Assistant Fund** – for general undergraduate research assistance (21-222452)