

Winter 2010

CNS Connections, Winter 2010-11

University of Northern Iowa. College of Natural Sciences.

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CNS Connections, Winter 2010-11

Description

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CNS Connections

University of Northern Iowa



Installation of the wind-solar hybrid station, next to the Industrial Technology Center, took place on Dec. 2. See article on p. 2.

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Joel Haack

Message from the Dean

Greetings!

This past year was filled with successes and challenges. Enrollment at UNI was up in 2009-10 for the third straight year, with 13,080 students choosing to continue their education

with us, an increase of 172 from the year before. Within the College of Natural Sciences, our enrollment of majors passed the 2,000 mark for the first time, as we had (coincidentally) 2,009 students majoring in at least one of our programs. That number represented an increase of 143 students over the previous year, a significant portion of the overall increase in UNI students. In light of the critical need to educate even more future citizens with a sound background in the sciences, technology and mathematics, we're delighted by the challenge presented by this increased enrollment. Preliminary figures for the fall 2010 semester indicate that enrollment figures for this year will be similar.

Faculty and students continued to work together to benefit students' learning and the cultural, social and economic development of the state. You will read many examples of this throughout this issue of CNS Connections. We remain committed, too, to producing well-qualified science, technology and mathematics teachers. Our role in the Liberal Arts Core, producing a well-educated citizenry, is a point of pride among our faculty. In short, the College of Natural Sciences is successfully participating in the mission of the university, and you can be proud to be one of our alumni or friends.

All of this is not to say that there weren't challenges last year! Continued declines in state support for public higher education forced all university employees to take salary cuts or unpaid furlough days. We were unable to replace a number of faculty and staff who chose to retire last fall. One-time stimulus dollars helped to ease the pain for our students, but there's little question that, without additional state support, the quality of education offered at the Regents institutions will suffer. We cannot in good conscience ask students to pay a greater amount for their education--many Iowa students simply cannot afford to pay higher tuition. As President Allen has noted, between July 1, 2008, and fall 2010, state appropriations to our base budget have been cut by 22.3 percent. The total amount of the cut was \$23 million. For some perspective, compare the size of the cut with the total budget for the College of Natural Sciences for 2010-11, which is just over \$16 million.

I am very grateful for the financial support from our alumni and friends at UNI, although of course it does not fully offset this kind of budget cut. The UNI Foundation received pledges and donations of some \$32 million in the past year; thank you for this! We also aggressively pursued grant and contract support for our students and faculty. Within CNS, faculty and staff were successful in obtaining awards for \$7.6 million in 2009-10.

Finally, I must share some news of an administrative reorganization at UNI. In January of 2010, I was named dean of the College of Humanities and Fine Arts, in addition to my position as dean of CNS, with the charge to facilitate the creation of a merged college by July 1, 2011. This new college will enroll one third of UNI's students in its majors and programs. The faculty will teach 40 percent of the student credit hours of the entire institution. The opportunity to create a new college is rare in academia; this is the first change in the college structure at UNI since 1989. A brief look back: CNS began as a college in 1968, one of four colleges created at that time, under the leadership of Clifford McCollum from 1968-83. Other deans have included Roy Saigo (1984-90), Gerald Intemann (1990-2000), and Kichoon Yang (2001-04), a remarkable record of stability for a UNI college. While we do not yet know what the name of the merged college will be, what is clear is that the combination of CNS and CHFA will be a very strong entity!

Please do continue to write to us with your news. Stop by campus when you can to say hello. If someone here has made a significant difference in your life, drop them a note or an e-mail to let them know; e-mail addresses are available at the UNI website, www.uni.edu. Finally, but just as important, if you are able to continue or to begin offering your support to CNS students through contributions to the UNI Foundation, be assured that we will provide excellent stewardship of your gift.

Joel K. Haack

Wind-solar hybrid power station in operation

The recently completed 12-kilowatt wind-solar hybrid power station, built next to the Industrial Technology Center, brings together two sustainable sources of energy that will reduce carbon emissions and provide a renewable energy teaching and research facility.

The power station was funded in part by a grant from the Iowa Alliance for Wind Innovation and Novel Development (IAWIND), a partnership of state and local governments, education institutions and the private sector that coordinates research and education in the rapidly expanding wind energy industry. Other funding came from Waverly Light and Power and in-kind contributions.

Both Pecen and Nie teach in the department's electrical engineering technology (EET) program, which was recently accredited by the Accreditation Board of Engineering and Technology (ABET), Technology Accreditation Commission. The wind-solar hybrid power project and other renewable energy projects were important criteria in ABET's accreditation reviews.

EET students Paul Johnson, Sultan Altamimi, Mac Russett, Aaron Spiess and Keith Dahl were actively involved in welding for the solar portion of the power station, with supervision from Jeff Rose, program coordinator of UNI's Materials Innovation Service. Steel photovoltaic frames were designed

and built in the production lab of the Industrial Technology Center. "We tried to keep costs as low as possible and at the same time provide valuable experience for our students," Pecen said.

The electricity generated by the hybrid power station is being used as a renewable energy input for a smart-grid-based greenhouse educational demonstration project to aid in teaching and research on smart-grid and energy-efficiency issues. Pecen used the system in a new wind energy class he taught in the fall 2010 semester, and he plans to offer workshops for Cedar Valley area STEM (science, technology, engineering, mathematics) teachers and local farmers who are interested in establishing small-scale wind-solar power systems. "We would like to prove that wind-solar hybrid power systems work well for helping Iowa's very valuable energy independence efforts," said Pecen.

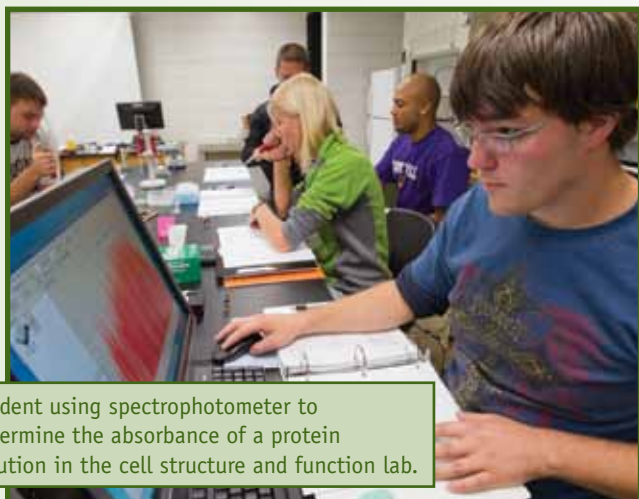
Approximately 18,835 kilowatt-hours of wind power and 3,325 kilowatt-hours of solar power-based electrical energy are being harnessed from the system, keeping approximately 31,025 pounds of CO₂ emissions out of the air each year, by using renewable energy sources instead of coal-fired sources.



Electrical engineering technology students work on building the foundation for the solar portion of the wind-solar hybrid power station in July 2010.

"Iowa is a wonderful state for wind-solar hybrid projects," explained Reg Pecen, professor of industrial technology, who designed and built the power station with Hong "Jeff" Nie, assistant professor in the department. "This is because its rich 'wind crop' from November through March and its 'sunshine crop' from April through September complement one another for zero-emission electricity generation."

Carver grants strengthen Biology, Chemistry and Biochemistry



Student using spectrophotometer to determine the absorbance of a protein solution in the cell structure and function lab.

Two CNS departments—Chemistry and Biochemistry and Biology—have benefited from Carver Foundation grants this year. Both grants have been used to renovate and update undergraduate research and teaching laboratories.

Chemistry and Biochemistry's grant of \$300,000 was applied to three laboratories in the older portion of McCollum Science Hall. A modern replacement hood and a new bench for the department's atomic absorption spectrophotometer have updated the physical chemistry teaching area.

The old instrumental analysis laboratory has been converted to a research laboratory for new materials based on the research of Colin Weeks, assistant professor, on three-dimensional metal organic frameworks. These

versatile materials can be "tuned" to host "guest molecules" in the pores built into the materials. The ability to change pore size makes these materials excellent choices for separating mixtures and for developing new catalysts.

The third area renovated is a research laboratory for the NSF-funded work of Martin Chin, associate professor, on organometallic compounds that may be catalysts useful in the production of methanol. Chin recently received American Recovery and Reinvestment Act funds to purchase a microwave reactor that has reduced the time students spend doing reactions from days to minutes. As a result, students get more experiments done and accomplish more in their research time.

Biology received \$150,000 from the Carver Foundation to purchase equipment and instrumentation to update and expand teaching laboratories for the freshman course Cell Structure and Function and the sophomore course Genetics. Matching funds from UNI allowed for the remodeling of both labs, providing a modern and comfortable working environment for students.

With the equipment and instrumentation funds, the department purchased new microscopes, cutting-edge equipment used in modern biology labs, standard lab equipment such as pipettors, stir plates, hot plates and centrifuges, and instrumentation that can be attached to computers so that data collection can be observed in real time, graphed and manipulated by students. Equipment funding for the genetics laboratory allows students to study mutation and gene expression in living model organisms.

Since both the Genetics and Cell Structure and Function courses are core requirements for all biology majors, access to the modern equipment better prepares students for advanced studies in biology during their junior and senior years.

Google-funded workshop for teachers held at UNI

UNI was one of 17 universities nationwide—including M.I.T., the University of California, Berkeley, and the University of Chicago—to be awarded a competitive grant from Google to conduct a workshop for middle and high school teachers (grades 7-12) last July. Called CS4HS, the workshop gave teachers an opportunity to learn tools, techniques and ideas for using computers in the classroom.

"A workshop like this is critically needed because well-educated high school graduates have to know a little bit about the logic and structure of computer programming in a simple environment," said Ben Schafer, associate professor of computer science, who was the lead instructor for the course. "To that end, teachers must be trained to help their students use age/ability-appropriate software and programming in a variety of classroom situations."

The 21 teachers, mostly from northeast Iowa, plus three UNI education majors, designed lesson plans for their classrooms during the intensive workshop and returned to campus in the fall to report on the implementation of the plans. "Google funded the proposal we submitted for a curriculum we developed from a variety of resources," Schafer explained. "Of the 20-odd workshops Google funded nationwide, there were probably a dozen different topics taught."

The response to the workshop was so positive that the Department of Computer Science hopes to offer it on a regular basis. "Teachers who were intimidated by the concept of programming, who knew they needed to learn more, came to understand that the logic of programming is relatively basic and the act of programming isn't difficult if you have the right tools/environment," Schafer said.



Instructors Ben Schafer (right) and Philip East (center) work with Lynne Campbell at the CS4HS workshop.

Applause

- **Peter Berendzen (Biology)** was the CNS recipient of the 2010 University Book & Supply Outstanding Teaching Award.
- **John Bumpus (Chemistry and Biochemistry)** is a member of the editorial board of *International Biodeterioration & Biodegradation*.
- **Cliff Chancey (Physics)** was appointed a member of the finance committee of the Iowa Academy of Science, and he was elected to serve on the Audit Committee of Sigma Xi—The Scientific Research Society. He is also president of the Iowa chapter of the American Association of Physics Teachers for the 2010-11 academic year.
- **R. Martin Chin (Chemistry and Biochemistry)** was elected president of the UNI chapter of Sigma Xi for the 2009-10 academic year.
- **Lyn Countryman (Biology/Science Education)** received second place among 700 secondary teachers nationwide for the PBS Teacher Innovator Award.
- **Ken De Nault (Earth Science)** received the Mayors' Volunteer Award Certificate of Appreciation in 2009 from the Cedar Falls, Waterloo and Evansdale mayors for flood recovery work, and in 2010 he was presented with the Rebuild Iowa Award for Service, an award that recognizes Iowans for outstanding work in Iowa's 2008 disaster recovery efforts.
- **Kavita Dhanwada (Biology)** is chair of the Environmental Sciences section of the Iowa Academy of Science. She received a one-year grant of almost \$30,000 from the University of Iowa's Center for Health Effects of Environmental Contamination for the project "Analysis of the Nontarget Growth Effects of Metolachlor on Human HepG2 Cells."
- **Mark Ecker (Mathematics)** received the Veridian Credit Union Community Engagement (Nonprofit) Award for the College of Natural Sciences for his work with Iowa Workforce Development and the Institute for Decision Making.
- **Larry Escalada (Physics/Science Education)** was appointed vice-chair of the Committee on Physics in High Schools of the American Association of Physics Teachers. He also was reappointed to serve on the Iowa Department of Education Model Core High School Science Curriculum Committee.
- **Mohammed Fahmy (Industrial Technology)** was elected to the board of accreditation of the Association of Technology, Management and Applied Engineering (ATMAE) and is chair of the board's accreditation teams. He also is chair of the Non-US Recognition subcommittee of the board. Fahmy received the Society of Manufacturing Engineers/Accreditation Board for Engineering and Technology (SME/ABET) Excellence Award for Outstanding Service and Support of the SME/ABET Accreditation Committee. The committee sets the accreditation standards and works with ABET to ensure the strength and rigor of the manufacturing engineering and technology programs in the U.S. and internationally.
- **Mark Fienup (Computer Science)** was elected president of the steering committee of the Midwest Instruction and Computing Symposium.
- **Scott Giese (Industrial Technology)** was appointed committee representative of the American Foundry Society (AFS) 4-B Committee and elected education chairman of the AFS Hawkeye chapter education committee.
- **John Groves (Earth Science)** was appointed head of an international task group to select a Global Stratotype Section and Point (GSSP) for the base of the Moscovian Stage of the Carboniferous Period. The task group functions under the auspices of the International Union of Geological Sciences, Commission on Stratigraphy.
- **Joel Haack (CNS and CHFA dean)** was elected a governor of the Mathematical Association of America by the Iowa section and served as a finalist judge for the Eastern Iowa Science and Engineering Fair in Cedar Rapids.
- **Bill Harwood (Chemistry and Biochemistry)** is co-chair of the Biennial Conference Committee of the American Chemical Society Chemical Education Division.
- **Chad Heinzel (Earth Science)** served as chair of the Geology section of the Iowa Academy of Science and was elected president of the Geologic Society of Iowa.
- **T.J. Hitchman (Mathematics)** was elected vice chair of the Iowa section of the Mathematical Association of America. He was awarded distinguished membership in the National Society for Collegiate Scholars, a student service and scholarship society.
- **Tom Hockey (Earth Science)** is editor of *Astronomy Education Review*. He did an interview for National Geographic Channel's "Known Universe," for an episode that aired in spring 2010.
- **Doug Hotek (Industrial Technology)** was appointed trustee of Pi chapter of Epsilon Pi Tau, an international honor society for professions in technology.
- **Elizabeth Hughes (Mathematics)** was accepted into the national fellowship program Supporting Service, Teaching and Research in Mathematics Education (STaR).
- **Mohammad Iqbal (Earth Science)** was an invited speaker on flooding at the World Water Week conference in Stockholm, Sweden, in August 2009. The annual event brings together hydrogeologists, environmental scientists and engineers from all over the world.
- **James Jurgenson (Biology)** was elected chair of the UNI Faculty.
- **Ali Kashaf (Industrial Technology)** was elected to the board of accreditation for Region 2 of the Association of Technology, Management and Applied Engineering (ATMAE). He was appointed External Promotion, Tenure and Performance Review Evaluator for ATMAE's university division.
- **Syed Kirmani (Mathematics)** was invited by the department of mathematics at the University of Franche-Comte in Besancon, France, to participate in a research collaboration in the summer of 2009.
- **Larry Leutzinger (Mathematics)** received the Lifetime Achievement Award from the Iowa Council of Teachers of Mathematics.
- **John McCormick (Computer Science)** was elected chair of the Association of Computing Machinery, Special Interest Group in the Ada Programming Language.

● **Catherine Miller (Mathematics)** is a member of the Universal Constructs/21st Century Skills Mapping Committee for the Iowa Department of Education. She was elected vice president for higher education for the Iowa Council of Teachers of Mathematics.

● **Hong (Jeffrey) Nie (Industrial Technology)** visited Chungbuk National University in the Republic of Korea in late October to deliver a 10-hour tutorial to graduate students in the department of electronic engineering there and met with faculty to discuss the current status, technical challenges, future services and application of digital communications and signal processing technologies.

● **Kevin O’Kane (Computer Science)** is a member of the editorial board of the Online Journal of Bioinformatics.

● **Steve O’Kane (Biology)** was honored by having a new plant species, *Physaria okanensis* (Brassicaceae), from Catamarca, Argentina, named after him. O’Kane, a world authority on the genus *Physaria*, wrote a monograph on the species, which is commonly known as O’Kane’s bladderpod.

● **Vicki Oleson (Mathematics)** was elected AEA 267 regional director of the Iowa Council of Teachers of Mathematics.

● **Reg Pecen (Industrial Technology)** is treasurer and newsletter editor of the American Society of Engineering Education (ASEE), Energy Conservation and Conversion Division. He also was elected as program chair for the division for the 2010-11 term. He received a Diversity Matters Award in January 2010 to acknowledge individual contributions to the advancement of diversity-related goals at UNI.

● **Ed Rathmell (Mathematics)** was appointed governmental liaison of the Iowa Council of Teachers of Mathematics.

● **Mike Roth (Physics)** received the Class of ’43 Faculty Award for Excellence in Teaching. He also was appointed as the UNI representative on the board of directors, Central States Universities, Inc.

● **Paul Shand (Physics)** received the 2010 Dean’s Award for Excellence in Teaching Departmental Programs.

● **Douglas Shaw (Mathematics)** received the 2010 Dean’s Award for Excellence in Teaching in the Liberal Arts Core.

● **Daryl Smith (Biology)** was appointed a registered agent of the Association for Integrated Roadside Managers.

● **Carl Thurman (Biology)** was awarded a grant of \$4,500 from the National Research Council of Brazil to study the ecological physiology, gene flow and demography among fiddler crab populations along the north Atlantic coast of Brazil, where he worked during the summer of 2010. The study is a continuation of an earlier project funded in part by a Fulbright grant.

● **Brian Townsend (Mathematics)** was appointed to the Affiliates Committee of the Association of Mathematics Teacher Educators.

● **Michael Walter (Biology)** successfully tested an anthrax spore detection prototype that employs bacteriophages to quickly detect the presence of dangerous bio-agent anthrax spores, Ames strain. He also accepted an offer from the U.S. Navy to DNA-sequence all phages in the UNI *B. anthracis* phage collection.

● **Jim Walters (Earth Science)** was elected national secretary-treasurer of Sigma Gamma Epsilon, the national honor society in earth sciences, and to the board of directors of the Iowa Academy of Science. He was appointed to the advisory board of the Iowa Geological and Water Survey of the Iowa Department of Natural Resources. Walters was the first UNI faculty member to receive a Commitment to c.a.r.e. (creating a responsible environment) Award. As the chair of the UNI Energy Conservation Committee since it was established in 2006, he was recognized for his leadership and dedication to conservation, sustainability and stewardship.

● **Catherine Zeman (RRTTC)** was appointed to the Governor’s Green Advisory Committee, which provides guidance to the Iowa Governor’s Office on recycling and sustainability initiatives, with particular emphasis on developing an Iowa-specific green certification program for recycling businesses and green manufacturers.

Transitions

New faculty

Biology: Julie Kang, assistant professor (Ph.D., University of Toronto, Canada)

Chemistry and Biochemistry: Colin L. Weeks, assistant professor (Ph.D., University of Sydney, Australia)

Industrial Technology: Todd L. Sirotiak, assistant professor (Ph.D., Iowa State University)

Mathematics: Matthew Webb, assistant professor (Ph.D., University of Missouri)

Retirements

Jean Gerrath, 16 years as a professor in the Department of Biology

Sherry Nuss, 12 years as academic adviser in the Department of Biology

Jerry Ridenhour, more than six years as a professor and head of the Department of Mathematics

Paul Rider, 41 years as professor in the Department of Chemistry and Biochemistry

Orlando Schwartz, 30 years as professor in the Department of Biology

Michael White, 31 years as professor in the Department of Industrial Technology

Changes in position

Kavita Dhanwada, associate professor of biology, and **John Fritch**, professor of communication studies, became associate deans of the Colleges of Natural Sciences, Humanities and Fine Arts, effective July 1.

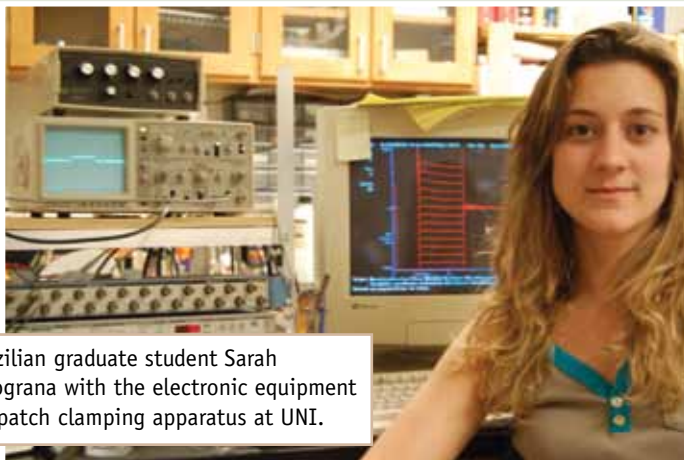
Siobahn Morgan, professor of astronomy and former associate dean of the College of Natural Sciences, is head of the Department of Earth Science. She replaced Jim Walters, who returned to teaching.

Douglas Mupasiri, professor of mathematics, is interim head of the Department of Mathematics. He replaced Jerry Ridenhour, who retired.

CNS News in Short

■ During the 2009-10 academic year, the **Department of Industrial Technology** offered the course Introduction to Sustainability, a broad overview of the challenges posed by environmental degradation and resource depletion and potential ways society can respond. Department faculty also participated in two other sustainability courses offered through Continuing Education and Special Programs: Wind Energy Applications in Iowa and Solar Energy Applications and Issues.

■ **Sarah Milograna**, a master's level student at the Universidade de São Paulo-Ribeiro Preto in Brazil, spent three months at UNI in spring 2010 to learn how to manufacture patch-clamping microelectrodes and use them to measure the electrical properties of cells. She worked in the laboratory of biology professor **Carl Thurman**, who was recently in Brazil as a Fulbright Scholar and collaborated with Milograna's adviser.



Brazilian graduate student Sarah Milograna with the electronic equipment for patch clamping apparatus at UNI.

■ The **RRITC** in the spring of 2010 helped eight UNI students make vermicompost, an indoor compost that uses worms to digest food waste and turn it into organic matter. Each student was provided with a 10-gal. bin filled with brown waste (high-carbon materials like paper and cardboard) to which they added their green waste, vegetable and fruit scraps that would otherwise have gone to the landfill. They were also given Red Wigglers to add to the compost mixture. The half-inch worms transform waste into organic soil by eating half their weight in one day.



Mike Christiason, Prairie Construction president, presents a \$75,000 check to UNI President Allen on behalf of Master Builders of Iowa.

■ **Master Builders of Iowa** presented a \$75,000 award to the construction management program in the Department of Industrial Technology. The gift supports efforts to seek accreditation for UNI's program, the only four-year construction management program in the state, from the American Council for Construction Education.

■ Five Iowa schools—Peet Junior High in Cedar Falls, Knoxville High School, Davenport West High, Ames High and Independence Schools—competed in the Iowa School Energy Challenge, a project to help students understand and improve their schools' energy use, during spring semester of 2010. The idea for the competition grew out of school energy efficiency assessments completed by the **Center for Energy and Environmental Education**.

■ More than 50 Boy Scouts from north-central Iowa attended a workshop in the Department of Industrial Technology's **Metal Casting Center**, where they molded, cast and poured a special commemorative Dutch oven to earn the Boy Scouts of America metalwork merit badge with a founder option. Participating Scouts, in groups of 15 to 18, attended the six-hour workshop in January or February. IT students, under the direction of **Scott Giese**, associate professor of industrial technology, assisted with making the molds.



Boy Scouts pour commemorative Dutch ovens at the Metal Casting Center.

■ **Green Iowa AmeriCorps**, a nonprofit housed in the **Center for Energy and Environmental Education**, was named one of 52 most innovative AmeriCorps programs in the nation. Green Iowa AmeriCorps provides a weatherization service at little or no cost, reducing residents' energy costs and making them more aware of energy use.

■ **Tallgrass Prairie Center** staff have written two books published in August 2010 by the University of Iowa Press: "The Tallgrass Prairie Center Guide to Prairie Restoration in the Upper Midwest" and "The Tallgrass Prairie Center Guide to Seed and Seedling Identification in the Upper Midwest." The former was written by **Daryl Smith, Dave Williams, Greg Houseal** and **Kirk Henderson**; the latter by Williams with illustrations by **Brent Butler**.

■ The **Recycling and Reuse Technology Transfer Center's** Get Your Green On has been named Best Public Education Program for 2009 by the Iowa Recycling Association. The program organized special events for students in all six Cedar Falls elementary schools during the past academic year, including inviting a magician to perform at each school. Get Your Green On, the only program of its kind offered in Iowa, provides service to more than 2,500 students, 300 teachers and staff members, and more than 5,000 parents.

■ **Governor Chet Culver** toured UNI's hydrogen fuel cell research facility in July as part of a two-day Iowa Power Fund tour. UNI's project received \$400,000 from the Iowa Power Fund and \$165,000 in matching funds. The research team consists of **Tim Kidd**, assistant professor of physics, **Paul Shand** and **Mike Roth**, professors of physics, **Laura Strauss**, associate professor of chemistry and biochemistry, as well as several undergraduate research assistants.

■ The long-running program, **National Alliance for Doctoral Studies in the Mathematical Sciences**, will conclude in the spring of 2011. One component of the program, which has been active



During his visit to UNI, Governor Culver talks with physics major Erik Wolter about the high-vacuum chamber that he built.

at all three Regents institutions, has brought undergraduates from underrepresented groups in the mathematical sciences to Iowa to study mathematics in an intensive eight-week summer program, culminating in the students giving presentations on their research projects. **Douglas Mupasiri**, professor and interim head of Mathematics, is in charge of UNI's portion of the program.

■ The Board of Regents, State of Iowa approved an actuarial science option, starting in fall 2010, for the **professional science master's program in mathematics**.

■ The **Center for Teaching and Learning Mathematics** received a Title II grant of almost \$425,000 from the Iowa Department of Education to provide mathematics professional development to teachers in southwest Iowa.

■ The Iowa Mathematics and Science Partnership is funding the UNI **ITeach program**, which consists of a one-credit seminar to help students make an informed decision about teaching as a career, scholarships for students majoring in STEM teaching fields, and summer or academic-year internships related to their future careers.

■ The Department of Industrial Technology's **electrical engineering technology (EET) program**, formerly the electrical and information engineering technology program, was recently accredited by the Accreditation Board of Engineering and Technology, Technology Accreditation Commission (ABET-TAC). UNI's is the only engineering technology program in Iowa accredited by ABET-TAC. (The engineering programs at UI and ISU are accredited by ABET-Engineering Accreditation Commission.)

■ A fourth distance education cohort for the **M.A. in science education**, which is on a three-year schedule, including academic years and summers, began in January 2010. The 18 students in the cohort attend remote sites located at Eddyville, Donnellson, Cedar Rapids and the Des Moines area.

■ The first three recipients of the **Yager Exemplary Teaching and Learning Recognition Award** were named in spring 2010: **Jonnie Becker**, a high school science teacher from North Butler High School in Nashua; **Melissa Hesner**, a secondary science teacher from East Buchanan Secondary School in Winthrop; and **Matt Robie**, a talented and gifted teacher from Westwood Elementary School in Ankeny. The intent of the award is to recognize exemplary science and mathematics teaching by UNI graduates. **Robert Yager**, professor emeritus of science education in the College of Education at the University of Iowa, received his B.A. degree in biology from UNI in 1950 and M.S. and Ph.D. degrees in plant physiology from the U of I, where he taught for 50 years.

■ In spring 2008, six students enrolled in the professional science master's degree completed, for the experiential component of the degree, a study on the feasibility of installing a solar energy photovoltaic system at UNI. The students—four in applied physics: **Nathaniel Becker**, **Nathan Beougher**, **Keith Colsch** and **David Hilgemann**, and two in applied chemistry and biochemistry: **Harrison Kibombo** and **Arshanapalli Sai Sravan**—recommended that UNI pursue an array of photovoltaic panels on a flat roof. As it happened, UNI installed a PV array on the roof of its Multimodal Transportation Center in June 2010.



Photovoltaic panels on the roof of UNI's Multimodal Transportation Center

■ For the first time, distinguished alumni of the College of Natural Sciences, including members of the CNS advisory board, returned to campus to share their perspectives and experience on a day specifically designated for that purpose, **CNS Alumni Fellows Day**, April 16. Alumni Fellows shared ideas on how best to prepare students to excel in a globalized workforce in several panel discussions, and they met informally with students, faculty and staff to share their insights. CNS students presented posters on their research.

■ The College of Natural Sciences offered a host of **summer camps** for middle and high school students this past summer. High school students constructed mini-sumo robots, learned how to use an astronomical telescope, got hands-on experience with how biotechnology is used in crime fighting, and built Boe-Bot robots. Middle school students received beginning and advanced training in LEGO robotics, and some of the basics of crime scene investigation.

CNS Students in the News

Recognition

● Biology graduate student **Parker Stuart** received the third place award for the Outstanding Master's Research Paper for his paper "Intelligent Design: The Scientific, Cultural and Educational Effects."

● One of two UNI teams competing in a regional meet of the Association for Computing Machinery's national programming contest, hosted by the UNI Computer Club in October 2009, won third place. Team members were **Samantha Fahrman, Ryan Murphy** and **Shawn Sonnack**.

● **Jack Kosmicki**, a bioinformatics major in the Department of Computer Science, won a highly competitive two-month internship at the Summer Institute of the Harvard-MIT Division of Health Sciences and Technology. The Summer Institute offers hands-on research experience in biomedical engineering and medical science to outstanding undergraduate students. Two other bioinformatics students from UNI, **Harald Kattinig** of Austria and **Mauricio Arriagada** of Chile, worked at the J. Craig Venter Institute of California during the 2009-10 academic year. After successful summer internships, the two graduate students were invited to stay for the year.

● Two teams of computer science students brought home first- and second-place wins at the fifth annual Cyber Defense Competition at Iowa State University in March. First-place winners were **Dan Cash, Danny Lockard, Nick Cash** and **Dan Boeding**. Second-place winners were **Nate Kemmer, Andrew Blinkmann, Leandro Avila, Samantha Fahrman, Mohammed Al Baharnah** and **J.C. Last**. **Paul Gray**, associate professor of computer science, advised both teams.

The competition challenges teams to maintain and secure a large collection of prescribed computer services while being subjected to various attacks and threats by security professionals.

● **Cassandra Hayne**, a double major in biochemistry and biology, and **Joseph Winder**, a mathematics and computer science double major, were nominated in 2010 for the prestigious Barry M. Goldwater Scholarship, a nationally competitive program that aims to identify students with outstanding potential for research careers in mathematics, natural sciences or engineering.

● **Jim Mason** and **Sean Hartnett**, both biology M.S. students, won honors at UNI's Graduate Student Research Symposium in April 2010. Mason won first place for his oral presentation, "Small Mammal, Bird and Butterfly Colonization during Early Establishment in a Prairie Biofuel Project," and Hartnett's poster, "Molecular Effects of Metolachlor Exposure on Human Cells," placed third. Mason also won the Burke Scholarship in Ornithology from the Iowa Academy of Science, while Hartnett was awarded a Sigma Xi research award.

● **Selena Losee**, a biology major, won the undergraduate award for best poster at the Sigma Xi Research Symposium.

final round of the National Student Construction Management Competition in San Diego in February 2010. The 23 participating teams prepared a proposal for building a 12-story hotel, which they had to update on the basis of quotes for equipment and project changes during a mock bid day. UNI's team—**Travis Augustyn, Matt Burch, Chris Harris, Justin Holthaus, Ryan Koopmann** and **Gavin Wicks**—was among the top eight teams selected on the basis of the revised proposals.

● Several science education master's students enrolled in Developing Science Curriculum received funding from various community agencies for grant proposals written as part of a course assignment. **Laura Witt** received \$764 for a weather unit for Blessed Sacrament School in Waterloo. **Tony Kisch**, a sixth grade teacher, received \$603 for a biology project at Central Middle School in Waterloo. **Melissa Spencer**, a science/chemistry teacher at North High School in Des Moines, received \$450 for whiteboards for her school. **Molly Crock**, a physical science teacher in the Monticello Community School District, was awarded \$8,000 to purchase Global Positioning System units, which students will use in a Positioning Yourself in Your Environment project.

● **Kyle Ross**, an industrial technology student majoring in electrical engineering technology, won fourth place in the national 2010 Radio Frequency Design Contest for his remote video control system, which he developed in a microcomputer applications class taught by **Jin Zhu**, assistant professor of industrial technology.



Members of the Construction Management Club team (l.-r.): Travis Augustyn, Chris Harris, Gavin Wicks, Ryan Koopmann, Justin Holthaus and Matt Burch

● A team of construction management students from the Department of Industrial Technology advanced to the



Solar Panthers team captain Hannah Loan prepares to begin a race.

- The Solar Panthers won third place overall in the World Championship Intercollegiate Solar Boating competition in Fayetteville, Ark., in June. The team also brought home a trophy for Outstanding Solar System Design for displaying outstanding knowledge and hands-on skills and ranked fourth in the Technical Report category. Team members, all in the Department of Industrial Technology, were **Hannah Loan, Tony Wagner, Damon Knowling, David Buseman, Justin Chu, Tom Mason and Abubakar Audu**. The team's adviser was **Reg Pecan**, associate professor of industrial technology. UNI will be the official host of the 2011, 2012 and 2013 world championship competitions.
- **Kerri Dickey**, an earth science major and meteorology minor, was one of seven students nationwide named Outstanding Teaching Assistants by the National Association of Geoscience Teachers, a professional society focused on the teaching of geosciences at all levels, including K-12 teachers, college and university faculty, as well as educators working with the general public.
- Mathematics majors **Mac Roepke, Ehrich Pakala and Tianyun Chen** represented UNI in the William Lowell Putnam Competition in December 2009. The prestigious annual mathematics competition is for undergraduate college students of the U.S. and Canada.

The team scored in the double digits for the second straight year. Pakala, Chen and **Kyle Pitzen** represented UNI at the Iowa Intercollegiate Mathematics Competition, sponsored by the Iowa section of the Mathematical Association of America. **T.J. Hitchman**, assistant professor of mathematics, was the coach for both teams.

- **Nick Cash**, a double major in computer science and economics, was one of five finalists in Entrepreneur magazine's College Entrepreneur of 2010 contest. He was selected for his business, Book Hatchery, which provides self-publishers the ability to manage and sell their texts as well as maximize their publications' exposure on the Internet through a comprehensive suite of software tools.
- Recycling and Reuse Technology Transfer Center interns **Philip Wilson** and **Halil Dulgeroglu** received a Campus Sustainability Award from UNI c.a.r.e.s. for their efforts in developing an in-dorm recycling program in Rider Hall, a program that has since been expanded to the rest of the UNI residence halls.
- **Matthew Graaf**, a chemistry and biochemistry major, received the 2010 CNS Dean's Award for Superior Achievement as a Student.

Research/projects

- Physics majors **Shanon Davis, Andrew Meyer, Matt Stroh, Matt Kaspar, Jeff Wallace, Kira Maltas, Brodie Wandling, Chris Walck, Mark Stalnaker** and **Erik Wolter** attended and/or presented at the 20th Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics and the Central States Universities Incorporated Research Conference in November 2009 at Argonne National Laboratory.

- **Valandria Jefferson**, a biology major, was one of five Iowa students who traveled to Brazil for six months in 2010 as part of the Iowa-Midwest Brazil Exchange in Business and Agriculture. Eight Brazilian students came to Iowa during the same period. After a Portuguese language immersion program, the Iowa students had a practicum with Pioneer Hi-Bred, Malunga Organic Farms or the Ministry of Agriculture.

- UNI's **American Chemical Society student affiliate group** and the Department of Chemistry and Biochemistry sent 12 students to present posters of their research at the ACS national meeting in San Francisco in spring 2010.

- **Graphics communications students** in the Department of Industrial Technology hosted two groups of youngsters, 4-H members from the Oelwein and Hazelton areas and fifth graders from Black Hawk Elementary School in Waterloo, to print specially designed T-shirts in the graphic communications production lab in the Industrial Technology Center in March and April.

Conversation with a UNI graduate

Brian Hynek graduated from UNI in 1998 with a B.A. in all sciences teaching, earth science teaching and earth science. He is an assistant professor in the Department of Geological Sciences, Laboratory for Atmospheric and Space Physics, at the University of Colorado-Boulder.

What have you been doing since leaving UNI?

I put my newly learned effective teaching strategies to work as a high school teacher of physics and chemistry in San Antonio, Texas. I knew I wanted to go to grad school to become a planetary scientist so after a year I headed to Washington University in St. Louis for my Ph.D. training. There I worked on mapping a candidate landing site on Mars that was eventually visited by NASA's Opportunity Rover in 2004. Although the mission was planned for only 90 days, it has lasted six years and is still going strong.

After graduate school, I headed west to a postdoctoral position in the Laboratory for Atmospheric and Space Physics at the University of Colorado-Boulder. I eventually became a member of the research faculty at CU and then a professor in the Department of Geological Sciences.

My research at CU has focused on understanding the history of water on the planet Mars and what that means for the possibility of past or even present life there. I go about this in a number of ways. First, I study the history of water on Mars by assessing the ancient dried-up river valleys and relic deltas to address the early climate of Mars. New data indicate that Mars must have had an active hydrologic cycle like Earth's and maybe even a large ocean. Second, I conduct laboratory experiments and modeling to study the processes that happened on early Mars, including hydrothermal processes that have been documented by Opportunity and its companion rover. My final large research focus is studying environments on Earth that are similar to those on early Mars to better understand its history. This includes scaling active volcanoes in Central America to sample their geology and microbiology.



Brian Hynek conducting research on an active volcano in Nicaragua to better understand the planet Mars

I have worked with NASA on a number of projects, including field tests of the Lunar Electric Rover that will head to the moon in the 2020s. The rover holds a two-astronaut crew, and I help in the "mission control room" by planning the rover traverses and assessing the scientific results. I also recently participated with NASA's Antarctic Search for Meteorites Program. Eight of us spent 50 days camping on the ice, self-supported and 300 miles from the South Pole. It was a chilly but amazing trip, and we collected more than 1,000 meteorites for future study, including some from the moon and Mars.

When I'm not gallivanting around the globe in the name of science, I have filled the rest of my time during the last eight years by teaching classes and mentoring graduate students at the University of Colorado. The university is a great environment, and you can't beat the scenery and recreational opportunities. Where else can you go rock climbing, kayaking or skiing on your way home from work?!



Searching for meteorites in Antarctica with NASA

How did your CNS degree contribute to your achievements?

Learning the fundamentals in earth science, physics, chemistry and biology at UNI prepared me well for a career in planetary sciences, where the planet must be considered as an integrated system. I conducted undergraduate research in earth sciences as well as physics, and that gave me an advantage in graduate school. Professors Jim Walters, Siobahn Morgan, Tim Cooney (all in Earth Science) and Roy Unruh (Physics) provided a personalized experience that is hard to get at larger institutions.

What do you hope to achieve in the future, career-wise?

My future research will continue to focus on Mars and Earth, but will be expanded to the moon and Mercury as we get new data from current missions in the next couple years. It's an exciting time to be a planetary scientist!

Faculty Research

Laura Jackson, professor of biology, has reviewed and synthesized research on perennial farming systems that resist flooding as well as agricultural options to reduce the amount of water that gets into the soil and to slow water's path into streams and rivers. According to her review, over the last 60 years, there has been an increase in row crops, which mostly use water in July and August, and a reduction in sod crops, which intercept water for a longer period of the year. She suggests that one way to reduce flooding is to increase the amount of plants that are able to use water throughout the entire growing season. Jackson and her co-author, Dennis Keeney, emeritus professor of soil science at Iowa State University, discuss these



Laura Jackson at UNI's tallgrass prairie

trends in a chapter of "A Watershed Year: Anatomy of the Iowa Floods of 2008," a book edited by Connie Mutel and recently published by the University of Iowa Press.

Nalin Goonesekere, assistant professor of chemistry and biochemistry, is developing a methodology for providing structural and functional annotation to newly sequenced proteins. After developing a set of structure-based amino acid substitution matrices and implementing these matrices in the popular sequence homology detection program BLAST, he and his students provided a functional annotation for many protein domains of unknown function (DUFs) in the widely used Pfam database. Goonesekere's most recent work, published in the journal *Computational Biology and Chemistry*, was co-authored with two undergraduates, Krystsen Shipley and Kevin O'Connor. Goonesekere is also investigating the pathogenicity-associated genes of a major corn pathogen, in a collaborative effort with faculty in the Department of Biology.

Kevin O'Kane, professor of computer science, is involved in the ongoing development of the open-sourced Mumps interpreter/compiler. A general purpose programming language that supports a unique, hierarchical (or multidimensional) database facility, Mumps was originally developed in the late 1960s and is widely used in financial and clinical applications. It is the basis of the U.S. Veterans Administration's computerized medical record system, the largest of its kind in the world. The main motivation for the current versions of Mumps was to implement tools for information storage and retrieval, text processing and bioinformatics. O'Kane has completed 13 releases of Mumps over the past 20 years, including this year (for the first time) one for Apple Mac OS and a Debian install package prepared by computer science major Ryan Murphy.

Mohammad Iqbal, professor of earth science, is conducting three related investigations of Dry Run Creek. He is determining the importance of base flow in the Dry Run Creek watershed by using ion tracers and fluorescent dyes to compare base flow characteristics between a perennial stream and its intermittent tributary systems. The second project involves finding "hot spots" of soil runoff nutrients into the Dry Run Creek watershed, and the third focuses on calculating water quality indexes of Dry Run Creek and the Cedar River by using the methods approved by the National Sanitation Foundation.



Mohammad Iqbal demonstrates groundwater sampling protocol for chemical analysis to students of his Hydrogeology class at the on-campus monitoring well site.

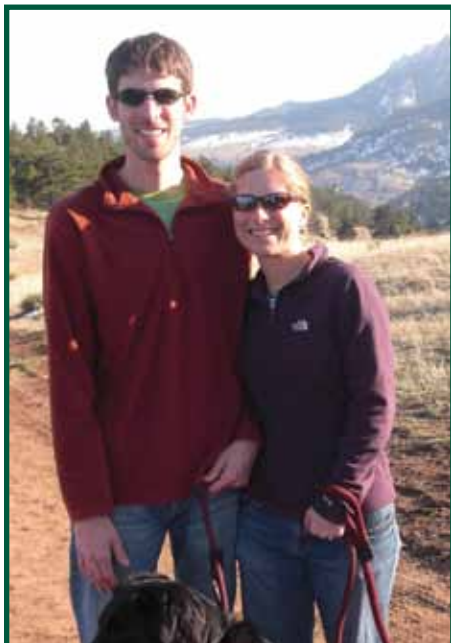
Md Salim and **Jin Zhu**, professor and assistant professor of industrial technology, respectively, are evaluating the use of distributed wireless sensor networks, instead of PC-based systems, to monitor transportation infrastructure, such as bridges. The two were awarded a grant of almost \$75,000 in September 2009 by the Iowa Department of Transportation for the project. Based on the practical, technical and financial requirements of monitoring, the researchers are investigating the sensor and data acquisition technologies and developing and testing a prototype unit in the field.

Ed Rathmell, professor of mathematics, has written the third generation of materials, piloted in a second grade classroom, to help students make sense of using derived fact thinking strategies for addition. Progress in achievement is documented by measuring speed and accuracy with basic facts, accuracy with mental computation, and ability to interpret and solve word problems with different problem structures. Preliminary findings indicate that students in the lower third of the class had the greatest gains across all of the assessments. Daily five-minute supplementary lessons for three weeks followed by two-minute drill activities three times a week for three and a half weeks enabled these low-performing students to "look like" average students in the class.

John Deisz, associate professor of physics, has developed computer codes to model electronic properties in materials where the effects of the interactions between constituent electrons are strong. The codes are able to model specific materials rather than artificial generic systems. He is currently applying this code to the modeling of charge and spin-order phases in copper oxide materials, modeling of the photoemission experiments of strontium ruthenate, and analyzing the metal-superconducting phase transition in a new class of superconductors, the pnictides.

Three CNS grads awarded NSF Graduate Research Fellowships

Three recent graduates of the College of Natural Sciences, Justin Bohnet, Alexa Warwick and Patrick Willoughby, were awarded National Science Foundation Graduate Research Fellowships (GRF) in April 2010. "We are immensely proud of these former students," said Joel Haack, dean of the Colleges of Natural Sciences, Humanities and Fine Arts.



Justin Bohnet and his wife, Cassy, also a UNI grad (B.A. '07, biology, P.S.M. '08, ecosystem management)

"This award is extremely competitive and goes to only exceptionally qualified students."

The GRF program recognizes and supports outstanding graduate students in NSF-supported science, technology, engineering and mathematics disciplines who are pursuing research-based master's and doctoral degrees in the U.S. and abroad.

GRF Program Fellows receive three years of support, a \$30,000 annual stipend, a

\$10,500 cost-of-education allowance, a \$1,000 one-time international travel allowance as well as access to the supercomputers at the TeraGrid project.

Bohnet, a 2008 graduate who majored in physics at UNI, is a doctoral student in atomic and molecular physics at the University of Colorado, Boulder. He is part of a team working on an atomic physics experiment that is using quantum nondemolition measurements on cold atoms to create novel quantum states of matter and light. These can be used to efficiently store quantum information or may make very precise measurements of time and fundamental symmetries of nature.

"Beyond learning the fundamentals of physics in the classroom at UNI, I had the opportunity to learn the fundamentals of research working with Professor Paul Shand on a study of nanostructured magnetic materials," Bohnet said. "I got to be involved with the process from setting up and running the experimental apparatus to interpreting data and reporting results. The focus on undergraduates at UNI really gave me the opportunity to gain experience I have needed to succeed at the graduate level."

Bohnet received an honorable mention in the Barry M. Goldwater Scholarship competition his senior year at UNI, where he was a Presidential Scholar and part of the Honors program. He also received the Purple and Old Gold Award in physics and was the joint commencement speaker in 2008. He was selected to go to Capitol Hill in Washington, D.C., for Posters on the Hill in 2007. In the summer of 2007, he was selected to participate in an NSF Research Experience for Undergraduates at the University of Minnesota.

A 2009 UNI graduate with a double major in biology and in modern languages: Portuguese/Spanish, Warwick is a second-year Ph.D. student at Florida State University. Her focus is the evolutionary history and contemporary conservation of amphibians and their associated habitats in the Americas. She uses genetic tools to relate species diversity to landscape features and geologic events in order to understand, and possibly alleviate, current threats to global amphibian diversity. Currently she is working with the rare pine barrens treefrog, *Hyla andersonii*, in eastern North America to understand the origin and maintenance of diversity across the range of the species.



Alexa Warwick doing fieldwork last summer

"I can't say enough good things about UNI," Warwick said. "Support for research is everywhere! Not only are grant monies available to directly apply to undergrad research, but there are also many different scholarship opportunities at the department or college level. Unlike at larger schools with many graduate students, UNI professors have more involvement with undergrads in and out of the classroom."

North American Prairie Conference hosted by Tallgrass Prairie Center

Warwick was a UNI Symposium Scholar and was awarded a Merchant Scholarship and the Barry M. Goldwater Scholarship. She also received the Purple and Old Gold Awards for biology and for her dual language major at UNI. At Florida State, she was awarded the Presidential University Fellowship, which provides four years of support and was awarded to only three of all incoming FSU doctoral students.

Willoughby graduated from UNI in 2008 with a major in chemistry. He is a doctoral student in organic chemistry at the University of Minnesota, where he is developing and applying methods of organic synthesis to better understand the biosynthesis of salinosporamide



Patrick Willoughby at a poster presentation

A. This natural product is the active ingredient in marizomib, a potential cancer therapeutic that is in phase I clinical trials for the treatment of multiple myeloma.

“The chemistry faculty at UNI offered highly relevant and intellectually stimulating courses while providing me with excellent opportunities for undergraduate research. I was involved with four interesting and diverse research projects in the Department of Chemistry and Biochemistry,” he noted.

Willoughby was a recipient of the Goldwater Scholarship in 2007-08 and the UNI Purple and Old Gold Award in chemistry in 2008. He was awarded a fellowship from the University of Minnesota Graduate School for 2008-09. In the summer of 2007, he was selected to participate in an NSF Research Experience for Undergraduates at the University of Minnesota.

“It speaks well for the overall quality of the natural science programs at UNI that students from three different fields—biology, chemistry and physics—have each been recognized for their outstanding abilities,” said Haack.

For the second time in two decades, hundreds of prairie enthusiasts converged on the UNI campus for the North American Prairie Conference, hosted by the Tallgrass Prairie Center (TPC) in early August. In addition to the 22nd biennial conference this year, the TPC hosted the 12th conference in 1990. The return engagement no doubt is related to the fact that UNI is recognized as a center for prairie studies and the study of roadside vegetation management.

This year’s conference, with the theme of Restoring a National Treasure, drew scientists, conservationists, educators, land managers, farmers, writers, artists and other prairie enthusiasts from all over North America. Reflecting the diverse interests of the groups attending, the concurrent sessions during the five-day event covered a wide variety of topics, including prairie management, prairie restoration and reconstruction, prairie communities, education and outreach, prairie fauna, prairie ecology and conservation, fire ecology and roadside prairies, invasive species, cultural prairie studies, prairie and energy, seed and soil ecology, prairie wetlands and native landscaping/urban prairies.

Four keynote speakers spoke on a range of topics from southern grasslands to prairie preservation and recovery in Iowa to a personal and literary journey into the prairie. TPC director Daryl Smith, the final keynote speaker, presented “Restoring a National Treasure: Investment for the Future.”

Participants also had an opportunity to take field trips to explore remnant and restored prairies before, during and after the conference, as well as to view local and national exhibits. The four preconference trips included the prairies of Red Rock Ridge in Minnesota and the glacial moraine prairies of northwest Iowa. Among the 14 full- and half-day field trips offered during the conference were trips to Hayden and Bluffton Hill prairies in Howard and Winneshiek counties, the Neal Smith Wildlife Refuge near Prairie City and the Cedar Hills Sand Prairie near Cedar Falls. The two postconference trips were to Effigy Mounds National Monument and the North Central Regional Plant Introduction Station in Ames.

“Besides presenting a vast amount of information through sessions, keynote speakers and field trips, the conference was a great opportunity for the participants to network and mingle with people outside their usual professional circles,” said Smith. “The participant response to this conference was awesome. Interest in prairie restoration is greater now than ever.”



Conference participants admire horse mint (foreground) at Cedar Hills Sand Prairie. Big bluestem can be seen in background, right.

Physics Department partners with Ankeny HS

Through the magic of technology, students at Ankeny High School were able to take UNI physics courses taught by UNI faculty this past fall. "These are not advanced placement courses," explained Cliff Chancey, head of the UNI Department of Physics, "but regular college courses for which the high school students earned college credit."

The partnership between UNI and Ankeny Community Schools, the first of its kind that UNI has entered with an Iowa public school, began because Ankeny school officials wanted to extend course opportunities for students who have exhausted their current options for mathematics and science courses at Ankeny.

"This partnership seeks to increase the numbers of academically talented high school students who major in physics or engineering in college," said Chancey. "We have the capability to make a difference with this program; UNI has made a significant investment in technology that allows UNI classes to be Web-broadcast to any computer connected to the Web."

Courses that were offered last fall through the partnership were General Physics, taught by Paul Shand, professor of physics, and Physics I for Science and Engineering, taught by Mike Roth, professor of physics. The General Physics course is aimed at students interested in pre-med, and the Physics I course is for students interested in physical science and

engineering. Students in the former course were required to have successfully completed high school algebra, and those in the latter had to be concurrently enrolled in or have successfully completed high school calculus.

Lectures, 150 minutes per week for each course, were delivered by real-time Accordent Capture station broadcast from the UNI Physics Department directly to any PC with a Web connection and also archived and available via Web access.

Laboratories were 110 minutes per week for each course. For General Physics, labs were managed through software-based exercises and Web-based simulations, with UNI providing all the software and any Web access that students needed. For Physics I, labs were supervised by an Ankeny High School teacher, with UNI providing the lab



Ankeny High School students enrolled in UNI's Physics I course time the travel of a block down a ramp for a dynamics experiment.

equipment and training at AHS.

A UNI tutor provided at least three hours of help per week to General Physics students and Physics I students via the Accordent Capture system; students could text or e-mail the tutor. In addition, Roth made on-site visits to Physics I students at least once a month.

"We see this partnership, which we hope to expand to other courses, as part of the solution to the ever-increasing cost of college," said Chancey. "By coordinating with high schools to offer college courses, we can shorten the time it takes to get a college degree."

Your support helps us maintain the level of excellence in the College of Natural Sciences. To make a gift to the CNS Dean's Fund for Excellence, visit www.cns.uni.edu/DeansFund.html.



From one generation to another...



Cassie Benning Luze
CNS Development Director
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Our future is walking on the sidewalks of the UNI campus. Today's students will be the driving force behind tomorrow's scientific discoveries and new businesses, and their creativity will add layer upon layer of richness to the world of music and art.

The generosity of our alumni is helping make those futures possible. Your generosity gives relief to what could

otherwise be a back-breaking financial burden as our students face escalating educational costs and post-graduation debt.

I've mentioned before the humble nature of our alumni, their surprise at our gratitude for their gifts and their wish that the gifts could be larger. Few of us who give are wealthy, but charitable giving in America has never been the exclusive province of the wealthy. Throughout our history, Americans from all walks of life have given generously. Those who support UNI at any level know that an educated citizenry is the backbone of our future.

Today, Americans voluntarily give more than \$30 billion a year to support higher education. Thanks in part to that philanthropy, the U.S. has the best colleges and universities in the world. Public universities across the country rely on private contributions to help fund their unique programs and distinctive achievements. We usually hear most about charitable giving when there is a terrible disaster. After Hurricane Katrina, we learned of the private generosity that totaled \$6 billion, but Americans routinely give that much to charity every week.

UNI supporters also understand that philanthropy is just good business. Wealth creation and philanthropy have always gone together in America and reflect the can-do spirit of a free society. We don't give just because we have the money. We give because we have the leadership and the passion to build institutions that educate our youth and improve our world.

Below are just a few of our alumni and friends whose gifts will impact the future of our students forever. The students at UNI owe them--and you--a debt they can only repay when it's their turn to give. That's when they, standing on the shoulders of the generations before them, will make other futures possible.

Real generosity toward the future lies in giving all to the present.

– Albert Camus

Jim Jermier, BA '95, MA '09, and his wife, Wendy Jermier, have recently made a gift to establish the Joanne Jermier Pre-Nursing Scholarship Fund in honor of his mother. The first recipient of the annual \$1,000 scholarship is Sophia Courneya, a junior pre-nursing major from Ames.

Bob and Carol Crane, BA '62, MA '75, and BA '61, MA '75, respectively, have created the Robert A. and Carol L. Hendrickson Crane Scholarship in Secondary Math Education with a gift to the Department of Mathematics. The \$5,000 annual scholarship will be awarded to a junior or senior majoring in secondary mathematics education. Carol is a retired math educator, and Bob is a retired Marine Corps colonel and retired CIO.



Alums Bob and Carol Crane funded a secondary mathematics education scholarship.

Associated Builders and Contractors of Iowa and Interstates Electric and Engineering of Sioux Center have created the ABC of Iowa Jim Franken Endowed Scholarship to benefit students in the construction management program. The endowment will award an annual scholarship to a junior or senior majoring in construction management at UNI. The late Jim Franken was a former CEO of Interstates Electric and Engineering and past chair of the ABC of Iowa board of directors.



Larry Den Herder, Interstates Electric CEO, Mike McCoy, ABC of Iowa board chairman, and Greg Spenner, ABC of Iowa president (front, l.-r.) present funds for the Jim Franken scholarship to Bart Bergquist, interim head of IT, CNS/CHFA dean Joel Haack (back, l.-r.).

Alumni News

1960s

Gary R. Nelson, BA '66, retired from Textron, Inc., is now a consultant to the company.

Dr. Tom M. Hughes, BA '68, was recently named professor emeritus of computer science at Kentucky State University. During his 19 years of service there, he taught philosophy and computer science and participated in research at the University of Kentucky, the Redstone Army Missile Command in Huntsville, AL, the Naval Air Warfare Center in Warminster, PA, and in Patuxant River, MD.

1970s

Robert L. Allbaugh, BA '70, MA '80, is an instructor of anatomy/physiology at Valley College of San Bernardino (CA). From January '06 to April '08, he was a Peace Corps volunteer in Thailand, where he was a teacher trainer for Thai English instructors.

Rex Fowler, MA '71, a retired earth science teacher, is establishing 34 acres of wetland on his farm in Union County through CP 23, a federal/state program to rehabilitate or re-establish wetland to its original condition. He is co-chair of site management for Scotch Ridge Center, a 47-acre natural area owned by the City of Carlisle, which will be used for environmental/conservation education and recreation.

William Forsee, BA '72, a teacher in the Omaha, NE, public schools, was a presidential elector for Barack Obama—the first Democrat elected by the state of Nebraska since 1964—for Nebraska's second congressional district in the '08 election.

Mark Rhoads, BA '72, MA '90, a behavioral therapist for children ages 6-17, married Britta Penca in '07. He earned a sport pilot gyroplane license in '08 and flies his home-built experimental gyroplane, Woodstock II, over the mountains and deserts of southeast Arizona.

Jeffrey Hepburn, BA '78, a high school chemistry teacher at Central Academy in Des Moines, was presented with the James Bryant Conant Award in High School Chemistry Teaching at the American Chemical Society annual meeting in San Francisco in March

'10. Among the other awards he has received are the Siemens State Award for AP Mathematics/Science Teacher in '06, the Distinguished

Service Award to Iowa Science Teachers from Iowa Science Teachers/Iowa Academy in '03, and the Iowa Chemistry High School Teacher for Excellence in Science Teaching from the Iowa Academy of Science in '93.



Jeffrey Hepburn

1990s

Shane Tichy, BA '94, an applications chemist for Agilent in Santa Clara, CA, was pictured in the Aug. 23 issue of Chemical & Engineering News in an article about the company.

Ali Awan, BA '97, is a senior lead software developer for Century National Insurance in North Hollywood, CA. He and his wife, Sonia, a public relations consultant, have two daughters, Miriam Aminah, born 11/04, and Sophia Aaliyah, born 10/08. He and his wife have traveled extensively in Europe.

2000s

Benjamin L. Torrez, BA '00, is an orthopedic resident at POH Regional Medical Center in Pontiac, MI.

Leta S. Bedard, BA '02, is a respiratory therapist in Waterloo.

Bradley Bechthold, BA '03, MA '07, was appointed supply base manager, castings, on 11/1/09 at John Deere, where he has been employed since '05. He is currently pursuing a second BA in German at UNI. Brad and his wife, Cheryl, have two children, **Doug** (BS '09) and **Kelsey**, a UNI sophomore education major.

Ben Frein, BA '09, won first place in the regional competition for the Global Student Entrepreneur Awards competition in Chicago in October '09. He was one of 13 U.S. and 19 international finalists selected through regional competitions to compete for \$150,000 in cash, prizes and services at the GSEA Global Finals Competition in November '09 in Kansas City, MO. GSEA recognizes the world's top undergraduate student entrepreneurs who are actively running successful businesses. Frein's primary company is E-Holdings LLC, which specializes in website design and hosting and operates several e-commerce businesses.

Tyler Lorenzen, BA '09, a high school teacher with the Fort Madison Community School District, was the first UNI alumnus to receive the Commitment to c.a.r.e. Award for "creating a responsible environment." The award was designed to acknowledge and honor the efforts of those who have significantly contributed to enhancing sustainability efforts at UNI.

Births

Jenny McElmeel-Bryant, BT '93, a castings purchasing manager with Caterpillar in Peoria, IL, has a daughter, Morgan Findlay, born in January '10.

Beverly (Lester) Jenkinson, BS '02, a teacher, and her husband, Tom, have a daughter, Lily Anne, born in February '09.



Clifford G. McCollum

Clifford McCollum, first CNS dean, dies

Dr. Clifford G. McCollum, the first dean of the College of Natural Sciences at UNI, died at age 90 on May 4, 2010, in Kansas City, Mo. After earning his B.S., M.A. and Ed.D. degrees from the University of Missouri, he joined the UNI faculty in 1949 as assistant principal of the Price Laboratory School. In 1957, he was promoted to head of the Department of Science, and in 1968 after the institution became a university and the Department of Science became the College of Natural Sciences, he was named dean, a position he held until his retirement in 1984. At his retirement, the science building was renamed McCollum Science Hall in his honor.

"Cliff McCollum was probably the ideal person who could have been selected as the first dean of the College," said Joel Haack, current dean of the Colleges of Natural Sciences, Humanities and Fine Arts. "He was uniformly well respected and acknowledged for his leadership and organizational abilities. We all owe him a debt of gratitude for the auspicious start he gave to the College."

CNS Advisory Board

The College of Natural Sciences Advisory Board provides advice, guidance, support and advocacy for the College's undergraduate and graduate programs: The Board members help to align the College's curricular offerings with changing educational needs; help to identify outside funding sources for the College and internship and other professional opportunities for students; and serve as advocates for the College by promoting positive relations with the external community.

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Amateur forensic scientist Zoriah examines fingerprints by magnifying them at the Middle School Crime Solvers camp in July.

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