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Engineering @Nebraska

Fall 2006



WHERE ARE THE WOMEN?





Supporting the College of Engineering at the University of Nebraska–Lincoln

The availability of scholarships for students is a top priority in the University of Nebraska–Lincoln College of Engineering strategic plan. Thanks to the generosity of alumni and friends of the College of Engineering, many engineering students have been able to attend their engineering classes with less monetary strain and a burst of confidence necessary to navigate the difficult engineering course load. The ultimate goal, however, is that every student enrolled in the College of Engineering will benefit from private support allowing them an advantage because of the interest and investment of their predecessors.

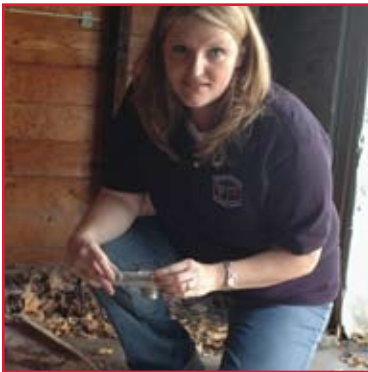
We recognize those who have established scholarship funds for engineering and look forward to a gift from you to continue growing the list of endowed scholarship funds and recipients. Please contact a College of Engineering representative at the University of Nebraska Foundation for more information on creating a fund of your own in support of future engineers at the University of Nebraska–Lincoln.

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Editor Ashley Washburn, BJ '02

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Engineering@Nebraska is published by the University of Nebraska-Lincoln College of Engineering. The University of Nebraska-Lincoln does not discriminate based on gender, age, disability, race, color, religion, marital status, veteran's status, national or ethnic origin, or sexual orientation.

Photos from top to bottom: In our cover story, Whitney Brown and Karen Coen-Brown share a mother-daughter moment. After Hours' Janet Renoe gathers crime scene evidence. A "green" Culture Center may be coming to UNL.

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Magazine Online www.nuengr.unl.edu/publications.shtml

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Fall 2006

How We Can Strengthen Nebraska's Economy

It is no secret that there is increasing interest in research at the University of Nebraska–Lincoln College of Engineering. Many of our stakeholders ask why there is so much emphasis on research when we are in the business of education. This is a question that has no simple answer. It is quite complicated, but here is my attempt to respond to this question.

This summer, you might have read newspapers that reported Nebraska has the slowest growing economy of any state. I don't need to tell you that this is dire news for the citizens of Nebraska. We faculty believe the College of Engineering can play a major role in improving the economic outlook of our state. We propose to accomplish this by graduating more, and



Photo by Tim Rendell

■ Dean David Allen

better-educated engineers that will infiltrate the business community in our state.

An essential part of a better education is the production of new intellectual property. In the past four years, the College of Engineering has doubled its research expenditures. There has been corresponding growth in the number of patent applications and scholarly publications from our faculty. These are not just “mad scientists” working in darkly lit laboratories. They are consummate world-class academics who are committed to passing on their knowledge to our students.

This is not just textbook education. It is the creative process whereby intellectual property

is created. For those of us who teach, this is our grand challenge—each of us is obsessed with passing on whatever truly unique skills we possess to the next generation of our students. I am proud to work with the faculty who face this challenge every day on behalf of the people of Nebraska.

The next time you hear about a research achievement coming from the College of Engineering, I ask you to remember that research produces knowledge that is passed on to our students, and these students are the economic future of the state of Nebraska.

—David H. Allen

It's Easy Being Green (and Red)

Agriculture is one of the world's oldest trades, but it's not an ageless one. And Roger Hoy, the new director of the University of Nebraska–Lincoln Tractor Test Laboratory, is ready to roll up his sleeves and make sure the 87-year-old operation still meets the needs of today's industry.

Hoy has the traditional background of a producer with more than a decade of experience in industry. Hoy grew up helping his father with the family's beef cattle operation near Crawford, Ga. He studied agricultural engineering at the University of Georgia but found his job prospects were limited.

"I was one of those unfortunate people getting an agriculture-related degree in the early 1980s," Hoy said. Because of the farm crisis, few companies were hiring new employees.

He took a job making brakes for diesel trucks and stayed involved in the American Society of Agricultural and Biological Engineers in hopes of changing careers when the economy improved.

While working as the development manager at Jacobs Vehicle Equipment Co., he met his mentor, Jim Ruff, who worked for John Deere in Waterloo, Iowa. Hoy and Ruff ended up at North Carolina State University—Hoy to finish his master's and doctoral degrees, and Ruff to teach. Ruff eventually returned to John Deere, and Hoy was hired in 1999 as a staff engineer with the company's Product Engineering Center.

"Here's my deep, dark secret," Hoy said. "Our family was traditionally an International Harvester family. They've converted to green now, but there was a lot of brand loyalty 30 or 40 years ago. You were either a red guy or a green guy."

Red is the color of CaseIH farm equipment. Green is emblematic of John Deere.

Hoy said even as a college student, he was aware of the Tractor Test Lab's expertise and feels fortunate to be here—and oversee the testing of farm equipment of any color.

UNL is the only university in the United States to have such a lab, which was formed because former State Sen. Wilmot F. Crozier purchased a tractor and was unhappy with its performance. He introduced a bill in the 1918 Legislature that required any tractor sold in Nebraska to be tested to ensure it performed as the manufacturer claimed. Thus, the Tractor Test Lab opened in 1919.

Nebraska is still the only state to have such a law, Hoy said, but almost all models end up being evaluated at the Tractor Test Lab anyway. The lab also is certified to test tractors to ensure they meet European standards required by the Organization for Economic Cooperation and Development. The most common tests include measuring the horsepower of drawbars, a machine's power takeoff capability and the weight forced hydraulic lifts can bear.

On average, the lab tests 25 tractors annually. Hoy said most testing happens in the spring and in the fall because outdoor temperatures greatly affect performance.

Hoy said his goal was to make the lab as useful to industry as possible, which could mean offering new tests and services that manufacturers request.

"They pay fees for their equipment to be tested," he said. "Leonard Bashford did a lot to move the lab from an antagonistic regulatory

body—at least that's how some people saw us—to one of the industry's partners." Bashford, the previous lab director, retired Aug. 31.

Hoy said he also planned to promote the lab's educational value. Each year the lab hires eight to 10 undergraduates who oversee many of the tests. It's a powerful learning and recruiting tool no other school can offer, he said.

"The students here are very prized by industry," Hoy said. "If you have experience and a good GPA, you stand above the others."

He said he wouldn't be content to let the lab coast on reputation. He said the lab may need to develop new tests because technology has changed. For example, most tests are configured for traditional transmissions but manufacturers are increasingly using infinitely bearable transmissions. That means tests might not be as accurate as they could be, Hoy said.

He's also pushing to upgrade the 50-year-old concrete track, which is cracking and showing signs of age. Pending approval from the Board of Regents, the track would be replaced in time for the fall 2007 testing season.

"There's tremendous opportunity here. There's a lot we could do, but we can't do everything all at once."

He'll also start teaching agricultural engineering classes in 2007. Hoy said in addition to being farmers, his father and grandfather were college professors "and I was supposed to be one too."

His expertise is rollover protection structures, which are built into the cab to protect the driver if the tractor rolls. ROPS weren't standard equipment until the 1980s even though they had been used in some tractors since the late 1950s. Hoy said the majority of farming fatalities are the result of rollovers in which the tractor lacks a protective structure and the driver isn't wearing a seatbelt. As director of the Tractor Test Lab, he will advocate for standard worldwide testing of the effectiveness of ROPS.

—Ashley Washburn

■ Former John Deere engineer Roger Hoy is the new Nebraska Tractor Test Laboratory director.



Photo by Ashley Washburn

Research Funding Reaches All-Time High

Both the College of Engineering and UNL received record amounts of external research funding during the fiscal year ending June 30.

UNL received \$104.6 million, more than half of which came from federal sources. The college received \$23.4 million, comprising 22.4 percent of the university's total.

"We are extremely pleased and happy with how well the college has done. The faculty needs to be congratulated on a job well done," Associate Dean of Research Namas Chandra said.

But the college can—and will—do more, said Chandra, whose goal is to double the college's research funding within five years.

To do this, the Dean's Office is being proactive in encouraging new faculty to apply for grants, he said. This includes helping them identify grant sources, visiting with potential sponsors and inviting them to campus, and assisting faculty with preparing their proposals.

The college also is encouraging more established faculty to form research teams with other departments at UNL and other universities, Chandra said.

Five years ago, UNL set a goal to obtain \$100 million annually for research. Vice Chancellor for Research Prem Paul said meeting that goal was a milestone in UNL's efforts to build its stature nationally and enhance research to better serve Nebraska.

UNL's research funding has increased 113 percent since 2000. Funding has more than tripled since 1996.

Examples of major grants wholly or partially awarded to engineering researchers in the last fiscal year are:

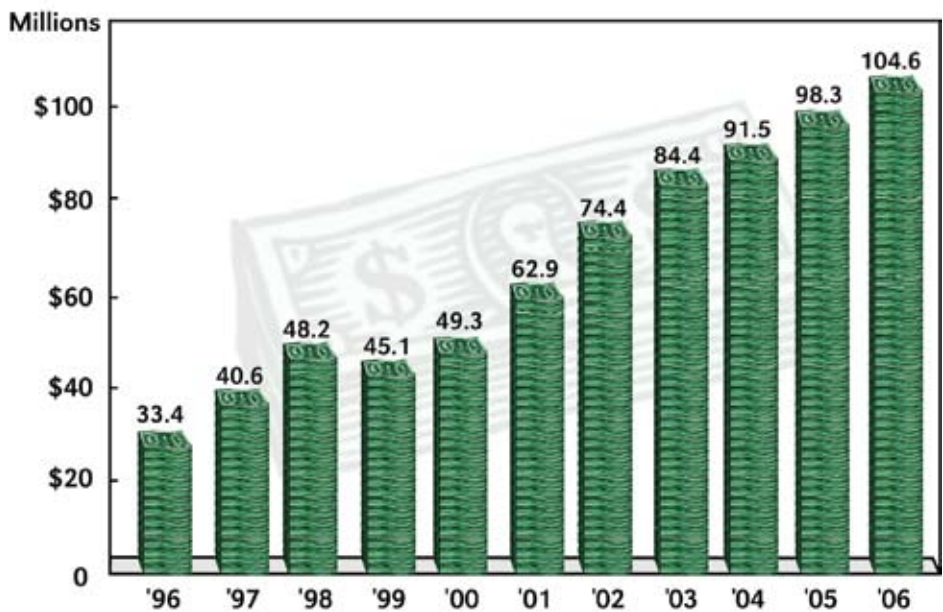
- \$9.9 million from the National Institutes of Health/National Heart, Lung and Blood Institute for a bioengineering partnership to develop a hemophilia therapy;
- \$7.4 million from the United States Department of Agriculture's Risk Man-

agement Agency to devise Web-based drought management tools for farmers and ranchers; and

- \$1.2 million from the National Science Foundation for a middle school math and science educational initiative using small robots as teaching tools

—Ashley Washburn,
with material from the Office
of University Communications

Growth in UNL External Research Funding



UNL's top five units in research funding are the Institute of Agriculture and Natural Resources, Agriculture Research Division, \$38.3 million; College of Arts and Sciences, \$27.2 million; College of Engineering, \$23.4 million; Vice Chancellor for Research, \$6.9 million; and the College of Education and Human Sciences, \$6.1 million.

Source: Institutional Research and Planning

Republic of Korea Selects UNL to Oversee Bridge Research Project

University of Nebraska-Lincoln engineers are leading a five-year initiative to modernize bridges in the Republic of Korea, which is expected to invest \$100 million to update its transportation infrastructure.

A consortium of industry, government and universities is developing a plan and conducting research for the project. The National Bridge Research Organization, a division of UNL's Department of Civil Engineering, is the liaison between U.S. and Korean researchers. Atorod Azizinamini, director of NaBRO and professor of civil engineering, is

leading the project.

"The Republic of Korea sees UNL as the authority on bridge engineering, and as a result, they want to work with us," Azizinamini said.

In the past decade, UNL researchers have developed several new bridge technologies, including the NU I-Girder, a system for bridges with long spans and shallow depths that makes construction faster and more economical, and the NUDECK, a system that makes construction faster and increases a bridge deck's lifespan.

Azizinamini said the initiative would give UNL international exposure for its bridge technology and showcase unique bridges in Nebraska. The nation's first bridges made

from high-performance steel are in Grand Island, Snyder and Omaha. Much of the groundbreaking research on high-performance steel was the result of collaboration between UNL, the Nebraska Department of Roads and the Federal Highway Administration, he said.

"These activities are the reason why the Republic of Korea selected UNL to be its U.S. partner," Azizinamini said. "Our selection was not a coincidence."

The NaBRO research team includes faculty from University of California, San Diego; Purdue University, University of Missouri-Rolla and University of Michigan.

—Ashley Washburn

UNL Gets Regional Transportation Center Bid

The University of Nebraska-Lincoln has been awarded a \$6.2 million grant from the U.S. Department of Transportation's Research and Innovative Technology Administration designating UNL's Mid-America Transportation Center as a regional university transportation center.

"For five years we have had a vision of winning this regional university transportation center and now our day has come," said Prem Paul, UNL vice chancellor for research. "This is an important grant because this center will put us in the driver's seat as the leader in transportation research and education in this

region, and it will put our faculty, our university and our state at the table where national transportation priorities are set."

The Mid-America Transportation Center is a consortium with UNL as the lead institution with regional partners Kansas State University, University of Kansas, University of Missouri-Rolla and University of Missouri. The Nebraska Department of Roads and the Kansas and Missouri Departments of Transportation also are key partners. Laurence Rilett, Keith W. Klaasmeyer Chair in Engineering and Technology in the civil engineering department at UNL, is the center director.

Nebraska has always been a transportation hub—from the days of the Pony Express and Oregon Trail through the building of the

first transcontinental railway, which began at Omaha. Today, Interstate 80 and the nation's two largest railways carry the nation's freight across the state, while the Missouri River is gaining importance as a transportation route.

"Nebraska is becoming a major transportation and logistics hub because of our strategic location and this is an important driver of economic growth of the state," said UNL Chancellor Harvey Perlman. "MATC, together with the Nebraska Transportation Center that we established in partnership with the Nebraska Department of Roads this year, will contribute directly to this sector of our economy through research that improves our roads and increases safety and by educating and training the next generation of transportation professionals."

Although the United States arguably has the world's best transportation system, it faces numerous challenges, including large increases in freight movements by all modes of transportation, Rilett said.

"This is particularly true in the Midwest, which is literally at the crossroads of the nation's transportation system," he said.

The UNL-based regional center's theme is "improving safety and minimizing risk associated with increasing multi-modal freight movement on the U.S. surface transportation system," which fits well with MATC's expertise. MATC will focus on safety research related to rural transportation. Key safety research areas include traffic control, animal crashes, safer at-grade railway crossings and work zones and the development of more effective and economical roadside crash barriers.

The university transportation centers program supports transportation research, education and technology transfer that promote scientific innovations in a variety of transportation modes and disciplines, according to U.S. Department of Transportation information.

MATC is the Region 7 center, serving Iowa, Kansas, Missouri and Nebraska. It is one of 10 regional university transportation centers in the nation. Other universities designated as regional centers in the competition included the Massachusetts Institute of Technology, Purdue University, Texas A&M University, the University of California and Pennsylvania State University.

—Monica Norby, Office of Research



■ Gears, Robots and CPUs: Students Get Engineering Preview

Participants at the 8th annual Academy of Excellence work together to build a bridge. Each team competed to build the strongest bridge using the least amount of labor, time and cost. Forty students attended this year's program, held at the Peter Kiewit Institute in Omaha. The program is led by College of Engineering faculty, who use hands-on activities to teach basic concepts of information science, technology and engineering.

High schools in Nebraska and southwest Iowa nominate sophomores for the program. The selected students also bring their math, science or computer teacher to the weeklong workshop. Douglas McGee, a teacher at East Butler High School in Brainard, said the workshop's cooperative learning and problem-solving activities were valuable to teachers and students. "It's a wonderful, wonderful experience that carries over to when they go back and work together in their own classrooms," McGee said.

Participants also took behind-the-scenes tours of Union Pacific Railroad Corp. headquarters, Lozier IMAX Theater, Henry Doorly Zoo, Durham Western Heritage Museum and the Strategic Air and Space Museum.

The Academy of Excellence is funded with support from the Dick and Mary Holland Foundation.

Kulik Remembered As Tough, Enthusiastic

Retired Assistant Professor Thad Kulik passed away July 30.

Kulik retired in 2004 after 25 years at the university and taught courses in communications and electronics design. He had an instrumental role in establishing an exchange program with German universities.

Bing Chen, chair of the Department of Computer and Electronics Engineering, described Kulik as a survivor. Most of Kulik's family was lost during World War II "under grim circumstances," Chen said. Kulik lived through communism and Germany's invasion of Poland. After graduating from a technical college in West Berlin, he emigrated and later became a U.S. citizen in 1992. Chen said Kulik was about 80 years old when he died, although no one is certain because his birth record was lost during the war and he didn't mention his age.

Chen said few people were aware of Kulik's background and knew him as an energetic person who cared deeply about his students and had high expectations of them.



■ Thad Kulik

Kulik is survived by his wife, Ann Brownell Kulik; son, Paul Kulik; daughters and sons-in-law: Alina and Erik Graedener, Magdalena and Chris Grossman; and two grandchildren.

Weekend Camp Teaches Girls About Engineering

The University of Nebraska-Lincoln College of Engineering and the student chapter of the Society of Women Engineers hosted Women Interested in Engineering Day on Sat., Sept. 16.

WIIE is for young women in grades 10-12 who are interested in math and science. Students and faculty lead hands-on activities introducing participants to various engineering disciplines.

This year's feature speaker was Angel McMullen-Gunn, a 2003 graduate who is a mechanical engineer for Hamilton Sundstrand in York.

The conference was established in 1998 to encourage young women to pursue careers in engineering.

Grants Over \$200,000

Fiscal Year 2007, First Quarter

■ **Hong Jiang**, National Science Foundation, "SAM2 Toolkit: Scalable & Adaptive Metadata Management for High-End Computing," \$602,326. ■ **Ashok Samal**, National Science Foundation, "Building Knowledge Discovery & Information Fusion Tools for Collaborative Systems to Adaptively Manage Uncertain Hydrological Resources," \$452,100. ■ **Michael Meagher**, Proteon Therapeutics, "Purification of proPRT-201," \$404,362; Syngenta, "Optimization of Phytase Production in *Pichia Pastoris*," \$372,874. ■ **Terry Stentz**, Department of Transportation-Federal Railroad

Administration, "Human Factors in Railway Operations," \$301,250. ■ **David Swanson**, National Science Foundation, "MRI: Acquisition of Affordable Shared-Memory Computing & Scalable Storage for Scientists & Engineers," \$300,000. ■ **Yuris Dzenis**, National Science Foundation, "Modeling-Based Control of Electrospinning Process," \$275,000; NSF, "Nanoengineered Interfaces," \$250,002. ■ **Yongfeng Lu**, National Science Foundation, "Self-Integration of Carbon-Nanotube Sensors in Functional Integrated Circuits," \$240,000; NSF, "MRI: Development of Multifunctional Nanoscale Measurement System," \$220,000. ■ **Ronald Faller**, Nebraska Department of Roads, "Development of a New Precast Concrete Bridge Railing System (2006-08)," \$229,820. ■ **Stephen Platt**, Department of Health and Human Services-National Institute of Biomedical Imaging and Bioengineering, "In Vivo Robotic Camera System for Laparoscopic Surgery," \$215,525. ■ **Scott Henninger**, National Science Foundation, "Ontology-Based Software Patterns," \$199,993.

New Faculty

Department of Computer Science and Engineering **Lorin Hochstein** is an assistant professor in the department. His research interest is software engineering with a focus on applying empirical methods to evaluate and improve software technology. Hochstein earned his Ph.D. from the University of Maryland in 2006, his master's degree from Boston University in 2002 and his bachelor's degree from McGill University in 1999.

New Staff

Biological Systems Engineering **Ella Carson**, accountant III; **Beth Page**, secretary, Industrial Agriculture Processing Center **Dean's Office** **Allison Post van der Burg**, receptionist; **Patricia Saldana**, communications manager; **Patricia Worster**, proposal coordinator

Engineering Administrative Services **Tricia Rabel**, administrative support associate **Mid-America Transportation Center** **Erin Gilbert**, research systems support associate



For the most current news about the College of Engineering, visit:

<http://engineering.unl.edu/collegeheadlines>



Engineering's Undergraduate Enrollment Climbing

This fall's freshman class of engineers is the largest since at least 1993, when the University of Nebraska–Lincoln began tracking enrollment by college.

Freshman enrollment this semester is 510, compared to 499 in fall 2005 and 455 in fall 2004. Transfer students are not included in those figures. The College of Engineering's total undergraduate enrollment is 2,449.

John Ballard, associate dean of academic affairs, said he couldn't pinpoint a reason for the college's growth but thought there were several factors.

The college may be reaping the benefits of making recruitment a priority, he said.

The college hired a full-time recruitment coordinator two years ago; before that, recruitment duties were divided among faculty and staff.

In addition to making formal campus visits, many freshmen have participated in one of the college's educational programs for students in grades 6-12, Ballard said. These outreach events introduce teens to engineering and show them what UNL offers.

"If we can get them exposed to our faculty and students on campus, we can be effective," he said.

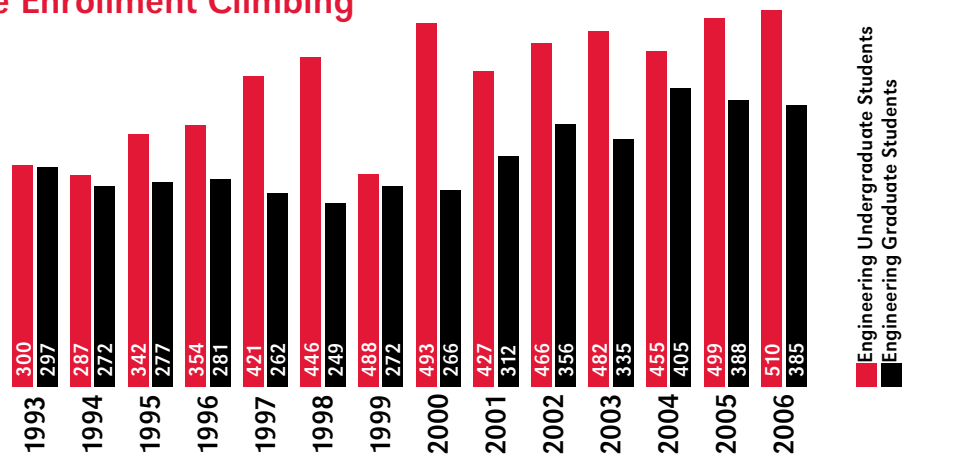
The job market for engineers also is rebounding after a slowdown from 2002 to 2005.

"You usually see a slight lag in enrollment until word gets out about what the job market is like," he said.

Ballard said the college could accommodate up to 3,000 students without hiring additional faculty or finding bigger classrooms—but that's assuming each major has a proportional number of students. Construction management and mechanical engineering are near capacity, but other programs have room to grow, he said.

UNL enrollment also increased this fall. First-time freshman enrollment jumped 8 percent, and overall enrollment rose 2 percent. According to a Sept. 7 university press release, the Office of Admissions has been successfully recruiting top students, transfer students and students from out-of-state suburban areas, in addition to Nebraskans.

—Ashley Washburn



Source: Institutional Research and Planning

Ballard Returning to Classroom

Few students have graduated without spending time with John Ballard.

To many, especially undergraduates, the associate dean is like another adviser, giving career advice and helping students figure out how to meet graduation requirements.

But after 13 years as an administrator, Ballard decided it was time to teach again. In August 2007, he will be a professor in the Department of Industrial and Management Systems Engineering. Ballard said he made his decision after much deliberation.

In an Aug. 21 letter to faculty, staff and students, he wrote:

"I want to thank the faculty and staff for

the continued support and encouragement that I received during my tenure as associate dean. Finally, to the students and alumni of the college—YOU ARE THE BEST, and you made my job the most enjoyable at the university.

"I am truly excited about returning to my role of professor of industrial and management systems engineering. Creation and the dissemination of knowledge is most rewarding. One of my colleagues says being a college professor is probably the best job in the world. I agree."

The announcement surprised Laura Podany, a junior biological systems engineering major.

"My reaction was that this is a great asset we're losing, but I'm glad he's staying with the college," Podany said.

■ Dr. John Ballard

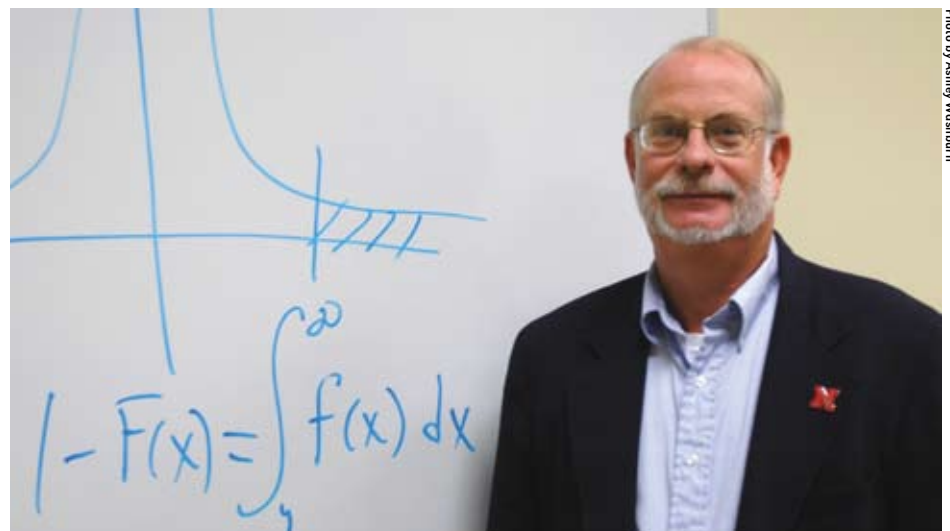


Photo by Ashley Washburn

Zamora is University's First GEM Fellow

By being the first GEM fellow from the University of Nebraska–Lincoln, graduate student Erick Zamora hopes he has opened the door for others.

GEM scholars earn graduate school fellowships, paid internships and career networking opportunities through the National GEM Consortium. The consortium's mission is to increase the participation of underrepresented minority groups at the master's and doctoral levels of engineering and science. Zamora, a native of Donna, Texas, was one of 161 fellows selected from more than 700 applicants. He is the first University of Nebraska–Lincoln student to win a GEM fellowship.

This summer Zamora had an internship at the Pacific Northwest National Laboratory in Richland, Wash. He studied materials characterization, the process of gathering information about a material's structure, properties and potential flaws.

"This was something I had little background in and was quickly intrigued by," Zamora said. "With this new experience, I have given more thought to what I want to do once I complete my master's degree."

He will have another internship at the laboratory next summer. In the meantime, he is working with Engineering Mechanics Professor Joseph Turner on a project associated with the dynamics of granular media.

"Not only have I learned a great deal in

WANTED YOUR OPINION

The first message in my inbox this morning was a note from alumnus Don Skoumal. Intrigued by the summer issue's focus on globalization, Don wanted to tell me about his career, which has taken him to Russia, Norway, and now, Cheyenne, Wyo.

Reading Don's story reminded me why I love alumni magazines: They are tangible connections between the university of today and the students of yesterday. You see, we don't painstakingly write, edit and design this magazine for ourselves or even the college. We do it to show our appreciation for you, the alumni who make this college what it is today.

This is your magazine, dear reader. You're our eyes and ears in the engineering world, and it's been awhile since we've heard from some of you. If an article raises awareness or evokes nostalgia, we want to know. Lest you think we're fishing for flattery, we want to know if we're missing the mark, too. Tell us how life unfolded after graduation, and your story (and mug shot) might appear in the next issue. The bottom line is, we want to cover the topics you want to read about.

Drop us a note and tell us how Engineering@Nebraska can earn a permanent spot on your coffee table.

—Ashley Washburn, Editor

an abbreviated amount of time, but it has allowed me to see something else, meet new people and interact with very experienced professionals in their respective fields."

Student Kudos

Khaled Alkhaledi, a graduate student in industrial engineering, placed second in the 2006 Philip E. Rollhaus Jr. Roadside Safety Essay Contest. He received \$1,000 for his essay.

Graduate student **David J. Miller** received the J.A. Woollam graduate fellowship and the Sigma Xi student travel grant.

Kimberly A. Ryland, a graduate student in mechanical engineering, won the Society of Women Engineers Intel Scholarship and the

American Society for Mechanical Engineers Marjorie Roy Rothermel Scholarship. Ryland also was a finalist for the Society of Women Engineers Collegiate Poster Competition.

David J. Miller and **Kimberly A. Ryland** won the NASA Nebraska Space Grant scholarships for the 2006-07 academic year.

Doctoral student **Lauren Ronsse** received the prestigious three-year National Science Foundation Graduate Research Fellowship to study architectural acoustics with Lily Wang, assistant professor of architectural engineering. Ronsse also received a scholarship from the Society of Women Engineers.

Graduate student **Jonathan Rathsam** will study next semester at the Institute of Technical Acoustics at RWTH Aachen University in Aachen, Germany. Assistant Professor of Architectural Engineering Lily Wang received an international research grant from the National Science Foundation that will cover Rathsam's costs.

The Nebraska chapter of the **International Association for the Exchange of Students for Technical Experience** won a bid to host the 2007 IAESTE Regional Conference in Lincoln.



■ Erick Zamora is UNL's first GEM Fellow.

Photo by Ashley Washburn

UNL placed second at this year's Big Beam Contest sponsored by the Precast/Prestressed Concrete Institute. Team members were **Scott Peterson, Ling Zhu, Nick Staroski, Saeed Javidi, Thomas Lutomirski, Scott Rosenbaugh** and **M.A. Stanigzai**. Each team designed, built and tested a prestressed concrete beam. Entries were evaluated on weight, cost, strength, ductility and accuracy of predictions.

The **Quarter-Scale Tractor Team** placed fourth overall out of 29 teams at the 9th Annual International Quarter-Scale Competition in Peoria, Ill. Each entry is tested on maneuverability, serviceability, manufacturability, safety, ergonomics and cost. The UNL

team also placed second in the scientific judging category and third in the oral report category. The American Society of Agricultural and Biological Engineers sponsors the competition.

Junior **Mitchell Schlieker** won a UNL transfer scholarship. The mechanical engineering major was in the honors program at the University of Nebraska at Omaha.

Thirty-five engineering students were selected for the Cornhusker Marching Band. Biological Systems Engineering—**Danielle Moores**; Chemical Engineering—**Kayla Die-diker, Aaron Fluitt, Eric Ohnoutka, Pedrom Rejai**; Civil Engineering—**Karen Clinch, John Coburn, Heath Cutler, John DeVol, Luke**

Summers; Computer Engineering—**Kyle Brown, Brian Dake, Jeff Kodad, John Tooker**; Construction Management—**Megan Lindell**; Electrical Engineering—**Justin Baker, Adam Breitbarth, Stuart Crittenden, Matt Johnson, Matt Leacock, Chris Reznicek**; Industrial Engineering—**Zac Brugler**; Mechanical Engineering—**Tim Aksamit, Erin Allison, Eric Cutler, Brett Drvol, Randy Frazier, Aaron Leacock, Ryan Oatman, Andy Severson, Andrew Shroll, Jason Thoendel, Ben Wan-kum**; Undeclared—**Brandon Engler, Douglas Loudon**.

Kudos

■ **Stephanie Adams**, assistant dean of research and associate professor of industrial and management systems engineering, was selected to participate in the National Academy of Engineering's 12th annual Frontiers of Engineering symposium at the Ford Research and Innovation Center in Dearborn, Mich. The symposium brought together engineers ages 30 to 45 who are performing cutting-edge engineering research and technical work in a variety of disciplines. Adams was one of 81 participants chosen from a pool of nearly 200 applicants, which included representatives from industry, academia and government. ■ The American Society of Agricultural and Biological Engineers recognized UNL faculty at its annual meeting in Portland, Ore. **Rick Koelsch** received an ASABE Presidential Citation for his work in developing standards in manure production and characteristics. Koelsch also received Blue Ribbon honors for a bulletin he co-authored, "Agricultural Environment Management Systems." **Roger Hoy**, director of the Tractor Test Lab, received a Presidential Citation. **Alejandro Amézquita, Lijun Wang** and **Curtis Weller** received a Superior Paper award for their paper, "Finite Element Modeling and Experimental Validation of Cooling Rates of Large Ready-to-Eat Meat Products in Small Meat Processing Facilities." **Suat Irmak, Derrel Martin** and **Jose Payero** received the Blue Ribbon award for their NebGuide, "Using Modified Atmometers (ET gage) for Irrigation Management." **Ayse Irmak** received honorable mention for a paper she co-authored, "Evaluation of the CROPGRO-Soybean Model for Assessing Climate Impacts on Regional Soybean Yields." **Laverne Stetson** received honorable mention for a paper she co-authored, "Water, Feed, and Milk Production Response to Dairy Cattle Exposed to Transient Currents." ■ An article by **Dennis Alexander**, electrical engineering, was featured in the July 24 issue of "Virtual Journal of Nanoscale Science and Technology." **Jitender Deogun** also contributed to the piece, "Demonstration of a nanoparticle-based optical diode." The Virtual Journal is published by the American Institute of Physics. ■ **John Woollam**, electrical engineering, was named a fellow of the American Vacuum

Society. AVS is a nonprofit group that promotes communication, research and education of the applications of vacuums and other controlled environ-

ments. ■ **Hendrik Viljoen**, chemical and biomolecular engineering, was appointed to the editorial board of "Computational Biology & Chemistry." ■ Thirty-four faculty members have service anniversaries in 2006. They were honored at a university-wide ceremony in September. 30 Years of Service—**William Holmes**, construction systems; **Keith Pedersen**, construction systems; **Roger Sash**, computer and electronics engineering; and **Rodney Soukup**, electrical engineering. 25 Years—**Jitender Deogun**, computer science and engineering; **Natale Ianno**, electrical engineering; and **Paul Jasa**, biological systems engineering. 20 Years—**John Paul Barton**, mechanical engineering; **Avery Schwer**, construction systems; and **Hamid Sharif-Kashani**, computer and electronics engineering. 15 Years—**Edward Terence Foster**, construction systems; **Hong Jiang**, computer science and engineering; **Hossein Nouredini**, chemical engineering; **Terry Stentz**, construction management; and **Wayne Woldt**, biological systems engineering. 10 Years—**Charles Berryman**, construction management; **Elizabeth Jones**, civil engineering; **Lim Nguyen**, computer and electronics engineering; **Lance Pérez**, electrical engineering; **Cho Wing To**, mechanical engineering; and **Christopher Tuan**, civil engineering. Five Years—**Florin Bobaru**, engineering mechanics; **Bruce Fischer**, construction management; **Wayne Jensen**, construction management; **Donald Nelson**, chemical engineering; **Jeffrey Shield**, mechanical engineering; **Jayanta Sinha**, chemical engineering; **Leen-Kiat Soh**, computer science and engineering; **Richard Stowell**, biological systems engineering; **Anu Subramanian**, chemical engineering; **Stephen Swanson**, chemical engineering; **Vinodchandran Variyam**, computer science and engineering; and **Xinwei Wang**, mechanical engineering.



WE'VE GOT YOU[®] BACK

Photos and story by Ashley Washburn

Students' experiences during their first two months of college often determine whether they will muddle or soar through the next four years.

The two leading factors that determine whether students stay at the university are the connections they make with a faculty member or adviser and how engaged they are academically, said Rita Kean, the University of Nebraska–Lincoln's dean of undergraduate studies.

With that in mind, the College of Engineering unrolled the welcome mat for the Class of 2010 before classes even started.

The college invited freshmen and exchange students to move to campus early and attend N.U.B.E. camp. Pronounced like “newbie,” N.U.B.E. stands for Nebraska Undergraduates Becoming Engineers. The inaugural two-day camp was designed to let new students meet their classmates and professors before classes began.

To Kean's knowledge, engineering is the first department to offer such an event.

Jacob Greenburg of Creighton said his transition into college at UNL would be easier because he already knew people.

“We won't have that awkward first month where you walk around a classroom trying to find someone to talk to,” said Greenburg, who also was grateful to meet a classmate with whom he could study calculus.

That built-in support system was what Bing Chen had in mind when he organized a retreat last summer for new students in the Department of Computer and Electronics Engineering. He said it was so well-received that he thought it should be offered to all freshmen.

Programs like N.U.B.E. cultivate a sense of unity among students, Chen said, which is key to an enjoyable college experience. More than 90 percent of the students who participated in last year's retreat stayed at the university—an amazing retention rate for any program, especially engineering, he said.

This year's camp had 68 participants—a strong start to what administrators hope will become a College of Engineering tradition, said Trish Fenster, N.U.B.E. event coordinator.

The following photo essay captures the first of many days that the freshman class will spend together.

We won't have that awkward first month where you walk around a classroom trying to find someone to talk to.

—N.U.B.E. Jacob Greenburg





1:25 p.m.—Hello

To break the tension, upperclassmen led a bingo game in which students asked others a series of questions such as “What is Bart Simpson’s father’s name?” and “Name a song by the band U2.” The objective was to get each bingo question answered by a different person.

For Nicole Frisbie of Seward, pictured above with Siera Gage of Lincoln, it was how she met several of her Neihardt dormmates. “I know I’ll stay in touch with the people I met today,” Frisbie said.

The next assignment was a scavenger hunt through the engineering complex, a task that puzzled even the orientation leaders. The Green Team was the first to arrive at the final destination, the Concrete Materials Lab—only to discover it had skipped several stops. Undaunted, the team (pictured below) turned around to search for the remaining clues. Junior Cassie McBride listened closely to laughter from another team echo through the hallway, hoping it would help her get the Greens on track. It never happened.

Steve Moody of Lincoln voiced what his classmates might have been thinking: “Is this supposed to teach us where to find things? Because I’m pretty much completely lost.”



3:30 p.m.—Goodbye

“Don’t ask for money because we’re not going to send any ... well, maybe your mom will,” said Don Wall, hugging his daughter Danielle.

Danielle Wall is from Fort Worth, Texas, but has been a Husker fan since childhood because her father is a UNL graduate. Like many freshmen, Danielle said she was excited to leave home—and a little scared, too.

“It’s going to be weird being away from my parents, but I have uncles and aunts in Lincoln that I can call if I need them.”

The Walls snuck in a parting conversation as Danielle boarded the school bus that took the newbies to Camp Calvin Crest near Fremont, where students from the Lincoln and Omaha campuses met.

“Bye, Daddy. I love you,” Danielle said.

“Stay away from the boys,” Don sighed.

Danielle’s mother, Shelly, glanced at the bus and said wryly, “There’s a whole busload of boys.”



5:45 p.m.—Relaxation

Following an afternoon jam-packed with activities and an un-air-conditioned bus ride, students were grateful for downtime before dinner. During a game of Frisbee football, Katie Pfeiffer of Clarkson attempted to block a throw from Josh Rhodig of East Lyme, Conn.

Across the gravel driveway, a more traditional form of football was underway. A group of exchange students from Brazil and Peru dutifully kicked off their flip-flops and started playing soccer. They were joined by Heidi Gengenbach of Blair, who headed the ball 30 feet to score 10 minutes into the game.

“That’s very good,” a teammate said admiringly.

Unbeknownst to him, Gengenbach has played soccer since elementary school. “They’re good,” Gengenbach said of the exchange students. “It’s fun to play with them.”

It might’ve been an intramural team in the making.





6:50 p.m.—Inspiration

In a mess hall more reminiscent of an elementary school cafeteria than college, Dean David Allen addressed the students.

"You're now officially newbies. In four years, I want you to be the leaders.

"... The people here are going to be your closest friends for the rest of your life because of this common bond of participating in something new to the university. ... Please remember this as a very important changing point in your lives."

Bing Chen added, "We want you to meet and depend on each other during this first year. We want you to have fun in addition to everything else you'll have to do."

7:30 p.m.—Teambuilding

Laughter—and a few falls—was more evident than skill during the Dragon Tails game, pictured above. Each team formed a line, and the person at the end of the "dragon tail" placed a handkerchief in his or her back pocket. The team to gather the most handkerchiefs from other teams was declared the winner.

The evening took on a more competitive mood when the dean challenged students to create an official camp cheer. He agreed to take the winning team, as determined by faculty and staff, to lunch at Vincenzo's. Team Linoma's cheer proved that appealing to people's emotions is a surefire way to win a competition:

*I don't know what I've been told
But newbie camp is like finding gold
I don't know what's been said
But engineers aren't brain dead
Sound off! / 1, 2 / Sound off! / 3, 4
I don't know what I've been told
But Dean Allen is really old!*

The crowd laughed approvingly and turned its attention away from Team Linoma to gauge the dean's reaction. Luckily, his flushed cheeks and wide smile indicated he was taking the ribbing well. Team Linoma tied Herbie and the Hotheads to win the cheer competition.



10:05 p.m.—Afterglow

The first evening of N.U.B.E. ended with students gathering around a campfire and listening to Detloff's rendition of George Thorogood's "Get a Haircut and Get a Real Job."

Detloff lent his guitar to other musicians, including Kalen Shuck of Davenport (pictured above).

Robert Froeschl of Falls City said it's hard for students to imagine what their instructors are like outside the classroom. Seeing them at camp, he said, "made them seem more human and approachable."

Jacob Greenburg said the camp reassured him that he's pursuing the right career.

"Sometimes I worry if I've made the right choice, but after talking to the professors and seeing how much they love it, it makes me excited." ■





These six women represent 2 percent of UNL's undergraduate female engineering students. They are (back row) Jenni Reisdorff, Sunita Gupta, (middle row) Michaela McBride, Carla McCullough, (front row) Scarlett Herring and Aimee Albro.



WHERE ARE THE REST?

STORY BY ASHLEY WASHBURN
PHOTOS BY AMY HENSLEY

Professor Suzanne Rohde struggles to understand why. Why are record numbers of intelligent women going to law school and medical school while female enrollment in engineering programs has barely budged?

“What are we doing wrong?” Rohde asked.

It’s a seemingly simple question without any easy answers. Even identifying the cause of the shortage is difficult, though three major themes have emerged: lack of awareness, recruitment tactics and sociological factors.

The College of Engineering’s approach to recruiting females and minorities has changed dramatically since alumna Angela Pannier was looking at colleges in 1997.

“There wasn’t much outreach back then,” said Pannier, BSE ’01, ’02.

Since then, the college has made recruitment and outreach a priority. In 1998, the college introduced Women Interested in Engineering Day, which brings girls in grades 10-12 to campus to learn about engineering and meet female students and faculty. This year’s event drew 63 participants, a new record.

The college hosts a litany of other events for middle- and high-school students: Discover Engineering Days, the Society of Women Engineers’ Junior Girl Scout Program and TEAMS competitions, to name a few.

As a result, undergraduate enrollment has increased from 1,920 a decade ago to 2,449 this fall, a 28 percent increase.

However, female students still comprise only 12 percent of the college’s student body. Female enrollment climbed from 224 in 1996 to 307 in 2002—and then dropped each year until 2006.

That might not be alarming if the rates were comparable to other profes-

sional fields. The number of females enrolling in law schools has climbed steadily since the 1970s, and the American Bar Association projects that females will comprise 40 percent of the legal profession by 2010.

The shortage of female engineering students isn’t a problem unique to the University of Nebraska–Lincoln. Numerous professional organizations offer grants, scholarships and fellowships to females with hopes of bringing more into the profession. Between 1993 and 2003, the National Science Foundation awarded 211 grants through its Diversity in Science and Education program.

Rohde said female faculty are getting frustrated. They lead workshops at Women Interested in Engineering Day. They go out of their way to talk to high school girls who visit campus. Still, Rohde said, there haven’t been any dramatic changes.

“It kind of hurts that so much time and money has been spent and nothing has really changed,” she said.

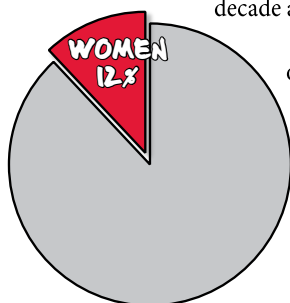
DOES PERCEPTION MATCH REALITY?

As a profession, engineering may suffer from a perception problem. To put it bluntly, Rohde said, the public doesn’t understand what engineers do. She recalls explaining to an eighth-grade girl what an engineer does for a living. The girl was unimpressed, Rohde said.

“Her response was, ‘So you make stuff?’ How do you reach a student that sees the profession as just making stuff?”

Engineering Professor Jennifer Brand said engineering is usually marketed as “making computer games and building racecars.” What people don’t understand, she said, is that engineering is a unique way of thinking that can be as creative and fulfilling as playing a musical instrument.

Brand said too often, engineers tell people about the difficult aspects of their jobs rather than touting the rewards.



Another problem, Brand said, is that engineering is one of the few professions that force someone to decide at age 18 if it's right for her. Students who choose law or medicine don't make that decision until they're 22 or older, she said.

Socialization may be one reason why it's difficult for colleges to recruit females—and get them to stay.

Brand said prospective students, especially females, think they have to be the next Einstein to succeed.

"We'll see equality when (female) C-students want to be engineers," she said. "Women feel if they cannot be the best, they cannot do it."

Rohde agreed. She said her male students' grades are distributed across the Bell curve while her female students tend to have the highest grades or the lowest.

"Women interpret their first C as a failure and migrate. The guys get a C in chemistry and they blame it on the professor being a jerk."

Fear of rejection also looms in some women's minds. Brand said she is alarmed by how many teenagers assume they'll be treated differently in school and at work just because they're female.

"I heard a high school girl the other day say, 'I don't want to go into engineering because I don't want to put up with that crap.' That broke my heart. I hope we're not talking about discrimination so much that we're scaring away people," she said.

When 21-year-old Alexis Jensen was choosing a college major, she knew she was entering a male-dominated field. "I took that as a personal challenge," said Jensen, an industrial and management systems engineering major.

She noticed the gender imbalance in her first engineering class, in which there were four females and 46 males. "Now I don't think anything of it," she said. "They're my friends and peers. The guys treat you with respect and don't talk down to you."

Pannier, the UNL alumna who studied biomedical engineering, said she rarely felt like she was in the minority because the gender ratio in her discipline was more equal.

"I have no negative thoughts of being a female engineer at Nebraska," she said. "If anything, people bent over backward to make us feel comfortable."

Pannier said part of her comfort level was the result of going out of her way to find a community within the college.

Kaylea Dunn, assistant director of recruitment and outreach, said she's noticed that female students tend to be highly involved in student organizations.

"It may sound stereotypical, but girls tend to be more social and understand they need to reach out and make connections with other people," she said.

Jensen also found some of her closest friends in the Society of Women Engineers and the Engineering Learning Community, which allows 70 freshman engineers to live together in Abel Hall. She credits her learning community mentor, Niki Waegli, for teaching her how to study and join clubs.

HOW SHOULD WE RECRUIT WOMEN?

Studying why a 17-year-old girl might choose engineering may provide clues to reaching her peers.

An ongoing National Science Foundation study is looking at the University of Oklahoma Department of Industrial Engineering's success in recruiting and retaining female faculty and students. The study compares OU to three other universities: UNL, which has similar demographics; the University of Pittsburgh, an urban campus; and Arizona State University, another metropolitan school.

The study has shown that the best predictors of whether a prospective student chooses engineering are his or her friends and relatives, the school's reputation and scholarship offers. Camps, workshops and job shadowing are less effective. (See essays by Karen Coen-Brown and her daughter, Whitney Brown, on pages 22 and 23.)

Jensen, a senior from Aurora, Colo., said her high school chemistry teacher encouraged her.

"I didn't have a lot of confidence because it was the hardest class I'd ever taken," Jensen said. "She told me I could go anywhere and do anything I wanted and gave me the confidence to pursue my goal and not let anybody talk me out of it."

Jensen said her parents, especially her father, were thrilled when she chose engineering. Her friends weren't as supportive. "I think they wondered if I'd be able to handle it," she said.

Pannier, now a doctoral candidate at Northwestern University, also said she wouldn't have considered engineering if her high school physics teacher hadn't steered her in that direction.

Engineering schools may have more success in recruiting females if administrators pay attention to not just who, but what, draws females to the profession.

Pannier said men are told to try engineering because they like machinery or are good at taking things apart and putting them back together. That message doesn't resonate with most women, she said. After researching several disciplines, Pannier knew she was suited for biological systems engineering because she wanted to solve medical problems.

At UNL, the greatest concentration of females is found in disciplines with artistic or healing components. As of September, the majors with the highest numbers of female students were architectural engineering, 48; biological systems engineering, 48; and chemical engineering, 36. (See essays by Michaela McBride and Lily Wang on pages 20 and 21, respectively.)

Rohde has noticed that her female students are drawn to service learning projects and the "help-



ing” side of engineering. “That’s not to say that the guys don’t want to help, but women tend to get more excited,” she said. “That’s what keeps women here.”

WHEN DO WE LOSE THEM?

The good news for young women is that they have more career opportunities than ever. However, that also means women with the intellectual ability to be successful engineers have other options to consider.

Dunn, the college’s assistant director of recruitment and outreach, said one of her greatest challenges is getting women to choose engineering over other interests.

“In high school, people excel at a lot of things,” she said. “Even if they’re good at math and science, they might love music performance.”

She hopes events like Women in Interested in Engineering Day make girls aware that engineering is a viable option and motivates them to take advanced math and science courses. WIIE also gets young women on the college’s radar before they even apply to UNL.

Rohde said she wonders if high school is challenging enough for the brightest students. “We miss a lot of young women because we’re not keeping them energized in high school,” she said, recalling her own high school experience. Rohde said she wasn’t a top student, but she graduated early to attend Iowa State University because she wanted a challenge.

Citing studies that prove until high school, males and females have near-equal performance in math and science, Pannier wonders if teen-

age girls feel social pressure to downplay their intelligence.

“It’s easier to play stupid and get the boys than to keep your grades up ... They need more role models to see they can be a woman and an engineer,” she said.

When she’s a college professor someday, that’s what she plans to do.

ARE WE ASKING THE RIGHT QUESTIONS?

Brand said she questions how important it is to track the number of women in the field.

“I see the low numbers of women in engineering as canaries in the mineshaft,” she said. “It is not the dying canaries that we should focus on; it is what these deaths indicate.”

Brand believes the college should be asking different questions: Do we have intellectual diversity in terms of creativity, interests and experiences? Do our students have intellectual curiosity?

The best way to bring women into the profession is to create a better engineering program for all students, she said. Possible changes could include a zero-tolerance policy for sexual harassment and discrimination; having the best instructors teach the introductory classes and reward them for doing so; changing the curriculum to include more individual lab experiments; and fostering a culture that encourages curiosity and originality.

Brand said these changes would be expensive and potentially difficult, but the payoff could be great.

“If we improve the mineshaft, we will save more than the canary.”





i AM A GIRL — a shopping-loving, mascara-wearing, cookie-baking girl with a weakness for shoes. I'm also an engineer. I didn't realize these things could go together until May of my senior year in high school. I was set in my plans to go to the University of Nebraska-Lincoln and study dietetics until I got a phone call from Ann Koopmann, a family friend and the former director of student relations for the College of Engineering. She suggested that I take a look at engineering. Despite my initial protests, I agreed to come check it out. After talking to Ann and visiting the Department of Biological Systems Engineering, I made a decision that reduced the amount of sleep I get by the same factor that my potential future income increased.


I've always enjoyed math and science, but I didn't consider engineering because I didn't really know what it was. I wish someone would've come to my high school and explained engineering like Dr. (Dennis) Schulte did in my first biological systems engineering class: Engineers solve problems. To me, solving problems means helping people, and that is what I like most about engineering. Last summer I started volunteering in the Gait and Motion Analysis Lab at the Research Institute at Madonna Rehabilitation Hospital. Being a research assistant has been a wonderful opportunity to gain experience and knowledge and see firsthand how engineering improves people's lives.

At UNL, women comprise about 43.4 percent of the Department of Biological Systems Engineering, so in those classes I don't feel like I'm part of a minority. In contrast, my general engineering classes and the study areas of Nebraska Hall are obviously male-dominated. I've never been less than comfortable there, and people are generally really friendly. Being a girl increases the probability that guys will stop by to introduce themselves and offer help and solutions manuals while I'm studying—but I can't complain about that.

My career aspirations are a little blurry. My plan is to emphasize in biomedical engineering, and I definitely want to work with people. The specifics will hopefully fall into place as I continue my studies and get more experience through internships. Until then, I'll just keep painting my fingernails and doing my homework.

—Michaela McBride, Sophomore, Biological Systems Engineering



A portrait of Lily Wang, a woman with dark hair and glasses, wearing a red top. She is looking directly at the camera with a slight smile. Her hands are clasped in front of her. In the background, there are faint decorative elements: a swirl in the top right and a star-like shape in the middle right.

FROM AN EARLY AGE, my mother pushed me to do well in my schoolwork, particularly in math and science. I attended an all-female school from 7th to 12th grade, and I continued to thrive and love my math and science classes. There weren't any gender issues since there were no boys around! I decided to pursue acoustical engineering as a career when I was 15 years old. I saw a description of this field in a physics textbook and decided that it was perfect for me because it combined my love for music with my talent for math and sciences. My father received his Ph.D. in mechanical engineering and worked for the Tennessee Valley Authority, so I knew about engineering as a career option. I had never been particularly drawn to what I thought he did for a living, but acoustical engineering brought art and science together and therefore seemed more attractive to me. During my coed university years, I certainly noticed that girls were a minority in my engineering classes. I did find it difficult to work in study groups with certain male students who did not seem to approach problems in the same manner that I did; eventually, my best study buddy was another female student in my engineering department.

There were few female faculty in my undergraduate and graduate engineering programs, so I don't feel that I had any strong female mentors in my career. Until a few years ago, I would have said that I didn't think it was that important to have female faculty mentors. Now, though, I believe that me being a female faculty member has been beneficial to female undergraduate and graduate students. Although neither these students nor I have encountered any major issues related to gender in engineering, I often find myself discussing with them topics related to being female: how we get noticed at professional conferences because we are women in a field dominated by men, how to be feminine yet professional in dress and behavior, how to deal with jokes and comments about our gender, etc. The mentoring of future female engineers is really one of my favorite aspects of being a faculty member.

From discussions with female students and colleagues, I do think that women tend to be attracted to a more creative (some may say "softer") side of engineering. You find higher numbers of women in acoustical engineering, biomedical engineering and other areas that seem to have either an artistic side or a service component. To recruit more women to our field, I believe it's important to continue highlighting how engineering is a creative endeavor that ultimately serves and benefits society.

—Lily Wang, Associate Professor, Architectural Engineering

A portrait of Whitney Brown, a young woman with long, wavy, light brown hair and blue eyes. She is looking directly at the camera with a neutral expression. Her hands are clasped together in front of her, resting on her lap. She is wearing a dark purple or maroon long-sleeved top. The background is dark and out of focus.

GROWING UP,

I was just like my three brothers. I played football and basketball, and being very competitive, I wouldn't let myself lose at anything—ever. This competition gave me the drive to do whatever I want to do, even if it's what nobody expects me to do.

In high school, I never wanted to follow in parents' and family's footsteps. I loved math and science and wanted to pick a college major and eventually a job that utilized those skills. I spent a lot of time looking into majors that fit my interests, and I loved to do anything but engineering. I had heard too many stories from my parents, and being a teenager, I wouldn't listen to my parents.

One day my mom suggested that I look into biological systems engineering. I was skeptical at first, but after looking at it further, I decided it would set me up nicely with an opportunity to go to medical school if I wanted. It has been a great fit for me. I have found some of my best friends in BSE and I'm really close with my classmates. It's just hard enough to keep me interested and more than busy. To be a female engineering student you have to get used to being in the minority, but I can handle it. We BSE students stick together and help each other out. My mother also lets me know that when times get rough, I'll make it—just like she did.

—Whitney Brown, Sophomore, Biological Systems Engineering



MY DAUGHTER WHITNEY is an engineering student, and I am proud of her. That's no surprise; moms serve as the pep squad for their kids, and I'm no exception. What is unusual is that part of my pride comes from Whitney following in my footsteps—I'm a professional engineer. I suppose we're an anomaly (in the variance sort of way, not the abnormality definition). An engineer in the family is unique enough, a female engineer is even more rare, but a mom and daughter combo is definitely a glitch!

It's funny, though, we don't see it as anything out of the ordinary. An aptitude for math, a love of science and you've got the makings of an engineer, male or female. That's what Whitney and I have. This foray into what is considered a male-dominated field doesn't seem unique to us. Perhaps that comes from a lot of exposure to other engineers. My father is an engineer, and so are my sister, brother and husband. Growing up in a family that does math problems at stoplights and geometry at the dinner table makes it seem normal!

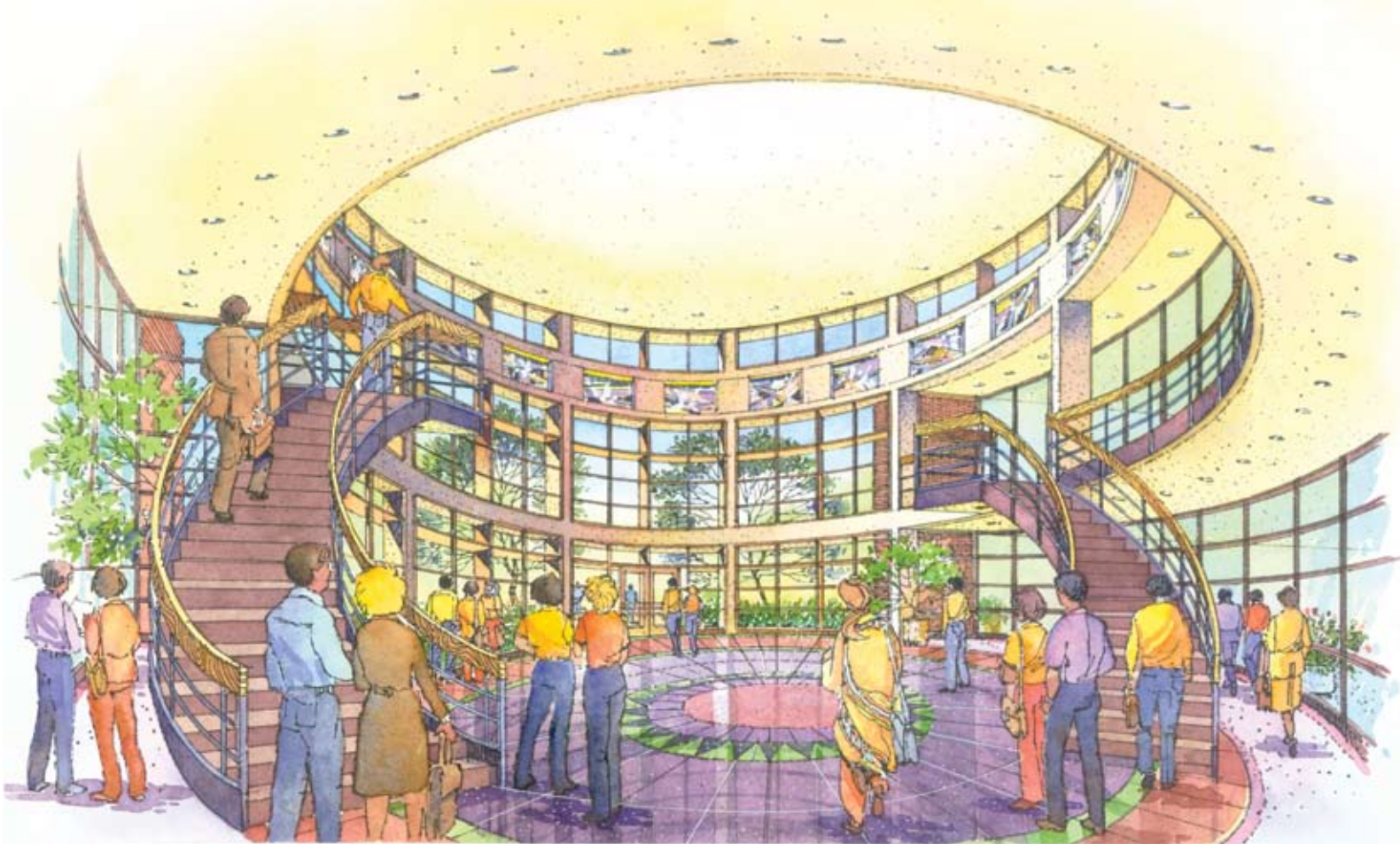
When Whitney was about one month old, I went back to school to get my master's degree in engineering mechanics. Engineering was a big part of the first two years of her life, whether

she was sitting in her stroller while I talked to professors or playing at the kitchen table while I graded papers. As a young child, her typical "why" questions were usually answered with a much more detailed, complicated explanation from her dad and me—you know how engineers are! No wonder Whitney doesn't feel out of the ordinary.

I'm excited she's going into engineering. It gives us a lot to talk about and much in common at a time in our lives when common ground is scarce. There are more female students in her classes than I had, but not by much. She knows what it's like to be the only girl in her study groups and now understands why my college friends are guys. Competition still seems to be a big thing; I can remember male classmates grabbing my papers to see if their scores beat mine. That still happens. I can relate when Whitney complains about her homework load because I've been there and done that. The hurdles we face aren't different from those faced by other engineers. We just have someone to relate to!

Whitney is a typical engineering student—hard working, driven and able to do calculus. And I still think she's pretty amazing.

—Karen Coen-Brown, Lecturer, Mechanical Engineering



Leading by Example

University Students Inspire an Environmentally Friendly Culture Center

by Ashley Washburn

Leila Knowles has always been interested in the environment, but she never expected to be a leader in the “green building” movement on the University of Nebraska–Lincoln campus.

Knowles, a junior civil engineering major, and Jeremy Emerson, a graduate student in architecture, founded the Emerging Green Builders in 2005. The group has students from architecture, engineering and interior design.

“We want to educate and inspire students to become leaders of the green movement and promote sustainable buildings on our campus and our community,” Emerson said.

The Green Builders found a platform when UNL students voted in March to raise student fees by \$12 per month to pay for half of an

\$8.7 million addition to the Nebraska Union. If approved by the Board of Regents, the addition will house the Culture Center, which has outgrown its headquarters at 333 N. 14th St. The university or private donations will pay for the remaining costs.

After the spring student government election, the Green Builders began lobbying administrators to build the Culture Center according to standards established by the U.S. Green Building Council. The nonprofit group's Leadership in Energy and Environmental Design designation is the official U.S. rating system for environmentally friendly buildings. Those with LEED certifications are evaluated in five areas: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

Green buildings have several advantages over traditional buildings.

Knowles said strategically placed windows bring in as much daylight as possible, which saves energy costs. Landscaping with native plants also reduces the amount of irrigation needed, she said.

Emerson said certain building materials are better for the environment because of what is used to make them or how they're manufactured. Green buildings also are healthier for people who work in them, he said.

Students have supported the Green Builders' ideas. The student senator from the College of Architecture introduced a bill before the Association for Students of the University of Nebraska to support construction of an environmentally friendly building. It passed unanimously.

Knowles said one potential obstacle stands in the Green Builders' way.

"Almost everyone likes the idea, but they want to know how much it's going to cost."

The Culture Center proposal includes a line budget item for LEED documentation. A building can get a basic, silver or gold rating depending on the design features and the materials used. Those that receive the highest rating are typically more expensive to build.

"Once they (university officials) build this, I hope they see that spending more money upfront will cost less in the long run because of lower energy costs," Emerson said. "Hopefully potential donors and students will see that too."

UNL Campus Architect Howard Parker said LEED certification is a growing trend across the country. He said earning the basic certifica-

tion is within reach, but at this point, he's unsure whether a silver or gold rating is possible. No existing UNL buildings have LEED certification, but the university also is considering it for the International Quilt Study Center on East Campus.

"We have limited funds for all these projects and we'll do the best we can to build sustainable buildings with limited funds," Parker said.

He said UNL recognizes that in the long run, environmentally friendly construction may reduce utility costs, which have strained the university's budget in recent years.

Nebraska Union Director Charlie Francis said the Green Builders had presented "a wonderful idea" and university officials will make the architect aware that UNL is interested in LEED certification.

The Board of Regents will decide Nov. 3 whether to move forward with the Culture Center addition. Francis said if the Regents vote in favor of the project, UNL will select an architectural firm in spring 2007. The design phase could last until 2008, when UNL would solicit bids and begin construction. The building could open in early 2010.

Emerson said when the Green Builders began talking to administrators, the group only expected to raise awareness about environmentally friendly design. Now the administration is using the group as a resource, he said.

"We're the link between professionals, solid research and the administration," Emerson said.

Knowles said that network doesn't exist yet because the green building movement is still new to Lincoln.

"People need to be communicating about what can be done and how will it be done," she said.

In addition to Parker and Francis, the Green Builders have received support from Juan Franco and James Griesen, the current and former vice chancellors for student affairs and Cecil Steward, emeritus professor of architecture.

Knowles said it is too soon to tell if the Green Builders have been successful.

"It's really early in the process, and that's why we need to stay

involved and keep pressuring the administration and talking to them to make sure things get done," she said.

Emerson said the process has been a valuable learning experience.

"This has taught me that small groups can make a difference, but it takes collaboration and cooperation between lots of people." ■



Department to Offer "Green Building" Class

Junior Leila Knowles said another goal of the Emerging Green Builders is to lobby for engineering classes that teach students how to design and build green buildings. She'll get her wish next semester.

For the first time, the Department of Construction Management will offer CNST 850: Sustainable Construction. Assistant Professor Wayne Jensen said the department has an obligation to promote the design, construction and operation of buildings that are environmentally friendly, profitable for the owner, and healthy places in which to live and work.

Three faculty members in the department have completed training to become affiliated with Leadership in Energy and Environmental Design. Jensen said LEED certification has become a rapidly expanding subcategory within several areas of construction.

"As CM faculty members, we play a key role in disseminating information about sustainable construction to the future leaders of the construction industry within Nebraska and throughout the world," Jensen said. ■

How the Peace Corps Changed His World

Many people told him not to go. Zach, they said, *how will you find a job when you get back?*

He worried about that too, but Zach Kippenbrock couldn't shake the feeling that he should use his engineering skills for a greater purpose. Six weeks after graduating in May 2004, Kippenbrock moved to rural Panama to build and design water systems.

"I wanted to experience the remoteness," he said. "I wanted it to be something completely different, something that would change my life."

Currently, there are 34 University of Nebraska—Lincoln graduates in the Peace Corps. Gretchen Mills, UNL's Peace Corps coordinator, said volunteers need a sense of adventure and a desire to help others. She said Kippenbrock was a good match for his assignment because he has those intangible qualities, plus a degree in biological systems engineering.

He learned about the severity of Panama's water and sanitation problems by traveling and living with native families. The first village Kippenbrock lived in, Charco la Pava, had an aqueduct but the water looked like chocolate milk because it contained so much mud, he said.

In another village, people were constantly exposed to waterborne diseases because they used their main water source, the Rio Changuinola, for a latrine. To solve this problem, Kippenbrock built a new latrine that decomposes waste into agricultural compost.

"I'm not trying to be critical of Nebraska or the United States, but we really don't understand what the rest of the world sees,"

Kippenbrock said. "There are over 1 billion people on Earth who don't have potable water. Everyone here is so blessed."

During his two years in Panama, Kippenbrock helped design and build 13 water systems or aqueducts. He also taught communities about the importance of clean water and showed village governments how to apply for funding to build water systems.

"We've been blessed with skills as engineers to really make a difference in the world," he said.

I hope in my heart that I won't lose some of the behavioral skills I learned there, like patience and focusing on family and friendships.

—Zach Kippenbrock

Going into the Peace Corps instead of the workforce didn't hurt Kippenbrock's career. He's had several job offers since he returned to the United States in September.

Kippenbrock said he is pleased with the projects he finished, but he's most proud of adapting to a culture that is radically different from the Midwest. He grew up in Indianapolis and Kearney.

Kippenbrock said after 1½ months in Panama, he was lonely and questioning the long commitment. Charco la Pava was a three-hour hike from the nearest telephone, so he talked to friends and family only once a month. Communication with the village's 300 inhabitants was difficult because they spoke only Spanish or their indigenous language.

"I hit a point when I realized I needed to integrate into society to get through this or I wasn't going to last two years," he said.

With a group of local friends, he hunted

wild boars and turkeys in the jungle. Kippenbrock said hunting trips tested his endurance because he had to hike two hours back to camp while carrying game over his shoulders.

"Their desire to teach me about their way of life was incredible," Kippenbrock said.

Part of his assignment was teaching AIDS prevention. Through this assignment, he befriended a woman named Virginia. She made his lunches—usually boiled green bananas topped with beans—and told him stories about her life and children. Because she wanted her children to have a better life than hers, Virginia taught them about fidelity and natural family planning.

"For a culture that has limited contact with the outside world, it was neat to see how progressive she was," Kippenbrock said.

As Kippenbrock assimilated, he struggled to mesh his American values with the new ones he was learning. He missed hot showers and transportation. But he also wished Americans found more joy in simplicity and spending time with family.

"They're very content with the present and aren't always preoccupied with the future," Kippenbrock said. "The burden of rushing around to meet deadlines is lifted there."

Now that he's returned to the United States, Kippenbrock said he finds himself carefully observing how Americans spend money and interact with each other. He checks his e-mail less, turns off his cell phone more and enjoys living in the moment.

"I hope in my heart that I won't lose some of the behavioral skills I learned there, like patience and focusing on family and friendships."

—Ashley Washburn

■ Zach Kippenbrock, '04, went to Panama with the Peace Corps to put his engineering skills to use.



Photos courtesy of Zach Kippenbrock.

Family Shares Story of Program's First Black Graduate

Editor's Note: Four years ago, Constance Walter, the former editor of Contacts magazine (now Engineering@Nebraska), was looking for photographs to accompany a story about an alumni award winner. In the process, she came across a photograph of Samuel ZaZa Childs Westerfield Sr. in the 1911 yearbook. Westerfield graduated that year with a B.S. in electrical engineering. Walter found it interesting that a black man graduated from the university at a time when most colleges and universities wouldn't accept black students. A cursory look through other yearbooks led Walter to believe that a black man in engineering was even more rare. Sure enough, Westerfield was the first black man to receive an engineering degree from UNL. She placed a request in the Fall 2002 issue of Contacts asking readers to provide information about Westerfield. Last fall, Walter was surprised to receive responses from two branches of Westerfield's family—neither of which was aware of the other. It turns out Westerfield's family had found the notice in the online edition of Contacts.

I began searching for information about Samuel ZaZa Childs Westerfield Sr. more than three years ago. An Internet search led to Westerfield's son, Samuel Z. Westerfield Jr., who worked in the Department of State and was appointed by Lyndon B. Johnson to serve as deputy assistant secretary for economic affairs with the Bureau of African Affairs. I also discovered a grandson, Samuel Z. Westerfield III, an anesthesiologist in Ohio.

But after finding these bits of information, my research had hit a dead end until the Westerfield family contacted me after finding the reader notice. Although they didn't have a great deal of information about Mr. Westerfield, what they provided has given us a glimpse into his life, one that was full and yet somewhat tragic.

More recently, Adella Bush, a niece of Westerfield who lives in Los Angeles, began corresponding with me. Her nephew Tim Richardson, who works with Boys and Girls Clubs of America, introduced me to his aunt through a phone call. Following are excerpts from two letters Bush sent:

"... My mother's family was from Lincoln (she was born there). Uncle ZaZa visited us a couple of times and we were all very glad to see him. Mother almost never discussed their early life. Tragically, it seems to me it is not unusual that black folks of that era didn't disclose much personal information."

She also explained that her uncle was married twice but was estranged from his first wife and family and that his son, Westerfield Jr., died in Africa.

Bush also sent a copy of a letter that Westerfield had written to his nephew Cecil on May 20, 1967, after Cecil visited him in New York. Westerfield wrote:

I recall that I used my summer vacation to equip me financially for the approaching fall session. I was very successful in landing some good paying jobs, especially those with high grade remuneration. The State Fair was held in Lincoln each year and the attending patrons were liberal in their tipping. I was glad to serve them accordingly.

His parents were married in 1885 or 1887, and he was born Nov. 11, 1889. He was home schooled until third grade and credited his mother with his academic success.

My darling mother (your great-grandmother Westerfield) ... attended Oberlin College ... and taught secondary school in Cincinnati or Cleveland, Ohio. Her maiden name was Ida Alice Childs. My mother's scholastic training showed in my studies in Lincoln High School and the University of Nebraska. My mother was the backbone and mainstay for me while I was in the University of Nebraska and also for

a short while after I graduated in 1911.

My father occasionally operated an open air café and the patrons appreciated his menus, and because it was outdoor cooking, the taste was superb and took on somewhat of a barbecue style.

While Westerfield was attending UNL, his father, Samuel Franklin Westerfield, was "waylaid in the basement of his café" and never fully recovered. He died in September 1907 or 1908.

Westerfield attended Harvard University, earning an LL.B. degree in 1916, and went on to teach at Morris Brown College in Atlanta. His mother moved to Chicago with his sister but died from pneumonia before he could reach her. For three years, he stayed in Chicago where he married and started a family. In 1919 he moved to Washington D.C.

Bush ended her letter with this tribute to her beloved uncle:

Uncle ZaZa was a small man. A delightful, well-informed man with a charming old school manner of speaking. I am sorry we didn't have more opportunity to be around him. Unfortunately, he was on one coast, and we, his sister Christeale's family, on the other. There just wasn't much back-and-forth travel.

Samuel ZaZa Childs Westerfield died in the late 1960s, but he left a lasting impression.

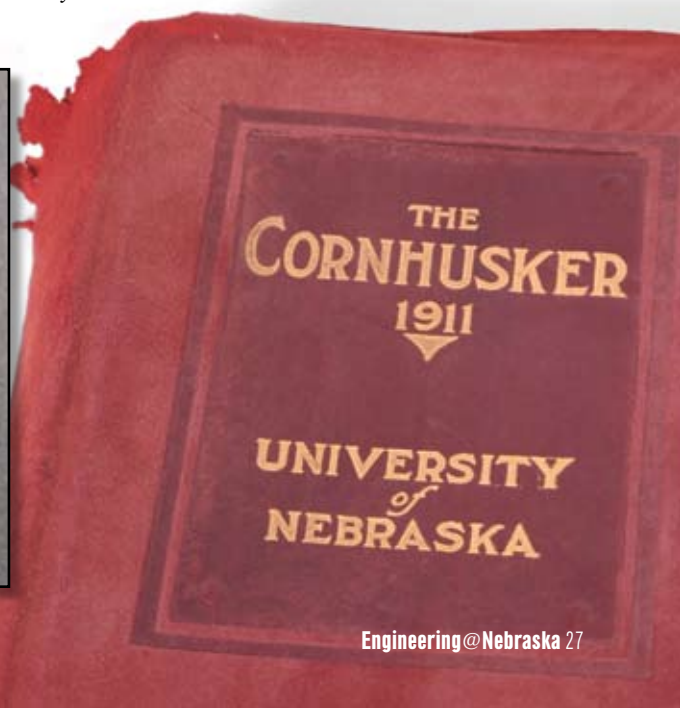
"He is remembered fondly by those of us in the family old enough to have met him," Bush said. "He was a dear man."

—Constance Walter

■ Samuel Westerfield Sr.



Photos by Tom Slocum.



connections

Register Now for Spring Career Fair

The Spring Career Fair will be Feb. 13-14, 2007, in the Nebraska Union from 10 a.m. to 3 p.m. Up to 200 employers will meet with students and alumni to discuss full-time and internship opportunities. Feb. 13 is reserved for business, liberal arts, government and nonprofit groups. The engineering, technology, science and agriculture portions of the Spring Career Fair will be Feb. 14.

Online registration began Nov. 1. For more information or to register, visit www.unl.edu/careers/springfair/.

General career information for alumni is available at www.unl.edu/careers/alumni/shtml.

Save the Date: E-Week '07

E-Week 2007 will be April 15-20. A tradition since 1913, E-Week is dedicated to acknowledging and rewarding engineers' accomplishments. Alumni and their families are invited to attend the annual E-Week Open House on April 20, during which senior engineering students will display their research projects, corporate representatives will host booths, and high school students will participate in hands-on activities that highlight the benefits of becoming an engineer.

For more information about E-Week, contact Chairman Aaron Stubbendieck at (402) 430-0284 or aaron@stubbendieck.com.

Seventy-four people competed in the 11th Annual College of Engineering Alumni and Friends Golf Scramble on Oct. 2. The winning team, pictured here, was Jerry Obright, Gretchen Dolson, Nick McElvain and Dennis Hirshbrunner from HDR.

The Friends of the University of Nebraska-Lincoln College of Engineering hosted the event, which was held at Firethorn Golf Club in Lincoln.

Class Notes

Engineering@Nebraska wants to know what its alumni are doing. Tell us about about your professional honors and memberships, career changes and family information such as births, marriages, graduations and deaths.

Log on to www.nuengr.unl.edu/alumni and click on Alumni Update Form.

Send us your photos to include with your class note. E-mail is the most efficient way to get your photos in Engineering@Nebraska. Send them to awashburn2@unl.edu and reference your class note. Please note that photos must be high resolution—at least 300 dpi.

Or you can send photos to:

Engineering@Nebraska
University of Nebraska-Lincoln
P.O. Box 880642
Lincoln, NE 68588-0642

Please include a self-addressed, stamped envelope if you would like them returned.



Dale Heerman, B.S. '59, agricultural engineering, received a presidential citation from the American Society of Agricultural and Biological Engineers. Heerman is a

professional agricultural engineer with the USDA Agricultural Research Service office in Fort Collins, Colo. In April, he was inducted into the Department of Biological Systems Engineering Hall of Fame.

Brock Peterson, B.S. '98, mechanical engineering, is the sales and marketing manager at Lincoln Composites Inc. The company makes compressed natural gas, compressed hydrogen tanks and accumulators for automotive applications. Peterson can be reached at bpeterson@lincolncomposites.com.

The Association for Operations Management recently named Bingguang Li, Ph.D. '02, industrial and management systems engineering, a Certified Fellow in Production and Inventory (CFPI) and a Certified Supply Chain Professional (CSCP). To qualify for these designations, candidates must complete a rigorous course of study and pass comprehensive examinations. Li is an assistant professor of supply chain management and quantitative methods at the Harry F. Byrd School of Business at Shenandoah University in Winchester, Va.

Friends We Will Miss

William F. Norris, B.S. '32, electrical engineering, died Aug. 21 in Bloomington, Minn. Norris was the founder of the Control Data Corp., which a Duluth News Tribune article described as "a launching pad for trends that ranged from supercom-



Photo courtesy of the College of Engineering.

puters to the socially conscious corporation.” Under Norris’s direction, Control Data was known as much for its programs that created jobs and improved education in low-income areas as the supercomputers it began creating in the 1960s. In 1989 he received the College of Engineering & Technology’s Outstanding Alumnus Award. Norris is survived by his wife, Jane, eight children, 21 grandchildren and six great-grandchildren.

■ **Joseph E. Peshek**, B.S. ’34, civil engineering, died March 24, 2006. He is survived by his wife and daughter.

■ **Howard E. Simonson**, B.S. ’36, mechanical engineering, died April 19 in Bartlesville, Okla. From 1936 to 1977, Simonson worked for Phillips Petroleum Company as a professional engineer. He was a member of the American Society of Mechanical Engineers, the National Society of Professional Engineers and the Oklahoma Society of Professional Engineers. Simonson was former president of the Engineers Club of Bartlesville and was involved in numerous church and civic activities. He is survived by his wife, Elizabeth, four children, four grandchildren and two great-grandchildren.

■ **Eldon Louis Nuernberger**, B.S. ’41, mechanical engineering, died June 3 in Chambersburg, Pa. He worked for ALCOA in Cleveland from 1941 to 1946. In 1946 he became an assistant chief engineering for T.B. Wood’s Sons. By his retirement in 1984, he had advanced to vice president of engineering. Nuernberger was president of the U.S. Mechanical Power Transmission Association from 1977 to 1980 and worked to establish national standards for the industry. In 1980, he was a delegate to the Mechanical Power Transmission Standards Meeting in Stockholm, Sweden, where U.S. standards were adopted worldwide. Nuernberger is survived by his wife, Louise, and his children.

■ **Raymond C. Coleman**, B.S. ’50, civil engineering, died in Tucson, Ariz. Coleman worked for Kirkham Michael in Omaha for 25 years and with Fenical & Dombraski Consulting Engineers in Tucson for 10 years. He is survived by his wife, Genevieve.

■ **Henry W. Wulf**, B.S. ’53, civil engineering, died Oct. 1 in Lincoln. Wulf worked for Harold Hoskins and Associates from 1952

to 1960. He spent the majority of his career at the Nebraska Department of Aeronautics. Wulf became the assistant state airport engineer in 1965 and advanced to state airport engineer in 1982. After retiring from state government in 1990, Wulf worked for the Federal Emergency Management Agency from 1992 to 1998. He held leadership positions in numerous

professional organizations, including the American Society of Civil Engineers, the National Society of Professional Engineers, the Lincoln Engineering Society and the UNL College of Engineering & Technology alumni advisory board. He was an adjunct faculty member at UNL in 1978. Wulf is survived by his wife, Opal, one daughter, one son and two grandchildren.

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Dec. 5

E-Day for Agricultural and Biological Systems Engineering, Lincoln

Dec. 6

E-Day for Electrical Engineering, Lincoln

Dec. 15

Recognition Reception for December Graduates, Lincoln

a

Dec. 16

Commencement

Dec. 23-Jan. 1

Holiday Closedown

Jan. 8

Spring Semester Begins

Jan. 31

Discover Engineering Day, fifth and sixth grades, Lincoln

p

Feb. 7

Discover Engineering Day, seventh and eighth grades, Lincoln

Feb. 13

Business, Liberal Arts, Nonprofit and Government Career Fair, Lincoln

n

Feb. 14

Engineering, Scientific, Technical and Agricultural Career Fair, Lincoln

Feb. 19-23

Peter Kiewit Institute Information Science and Technology and E-Week, Omaha

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Feb. 23

Admitted Student Breakfast, Lincoln

Feb. 24

Engineering Explorer’s Program, Omaha

Feb. 24

Peter Kiewit Institute Spring Open House, Omaha

Feb. 27

TEAMS Competition, Lincoln

l

March 4

Big Red Road Show, Omaha

March 10

Cadette Girl Scouts’ “Introduce a Girl to Engineering” event, Omaha

March 11-18

Engineering Learning Community Spring Break Trip

a

March 28

Peter Kiewit Institute Phone-a-Thon

March 31

Big Red Road Show, South Sioux City

April 15-20

E-Week, Lincoln

April 19

Dean’s Advisory Board Meeting, Lincoln

April 20

E-Week Open House, Lincoln

e

UNCOVERING THE CRIMINAL MIND

When police officers arrive at a crime scene, “Who did it?” is one of the first questions they ask.

Behind the scenes, people like Janet Renoe ask another: “Why did he or she do it?”

Renoe, a research assistant and staff secretary in the Engineering Research Center, is in her second year of a master’s degree program in forensic science. Forensic science is the gathering of impartial scientific evidence that can be used during criminal investigations and trials.

The profession is radically different from the one Renoe planned to practice. She came to UNL to get a degree in business administration, but Renoe said her abnormal psychology class was so fascinating that she changed her major. She graduated in 2004 with a bachelor’s degree in psychology and a minor in criminal justice.

“Understanding why people do the things they do or what happened in their childhood that may provoke criminal behavior is what interests me most,” Renoe said.

She is studying forensic science at Nebraska Wesleyan University, one of a handful of schools nationwide that offers the degree. The program has three tracks: investigation, chemistry and biology, and the one Renoe chose, behavioral analysis. Behavior analysts try to understand why people commit crimes and determine what personality types are prone to committing certain crimes.

UNL psychology professor David DiLillo said Renoe was a skilled researcher because of her diligence and ability to make people comfortable. As an undergraduate, Renoe worked with DiLillo in the Family Violence & Injury Lab on a newlywed project that studied how child abuse victims behaved once they married. She observed and mediated sessions in which couples spent 10 minutes discussing a marital conflict. DiLillo said it was an enormous responsibility for an undergraduate student.

Forensic science isn’t for the weak. During a two-week summer internship in Sydney, Australia, Renoe witnessed and collected data for an average of six autopsies each day. In Australia, Renoe said, autopsies are mandatory regardless of the cause of death. Behavior ana-

lysts usually aren’t present during autopsies, but it’s important to learn the process, she said.

“Doing autopsies is a lot different than seeing videos of autopsies,” Renoe said. “The smells were just ... it’s like nothing you’ve experienced in your life.”

She also analyzed a murder investigation during the internship. The case involved a woman who was killed on a cruise ship. The case had eight suspects and at the time, the court was questioning whether the investigation had been performed correctly. Renoe and another student had to study the case and decide whether they agreed with the investigator’s conclusion.

When asked how she handles her emotions during a case, Renoe admitted that she sometimes struggles. Renoe said when she witnessed a teenage girl’s autopsy, it was difficult not to personalize the situation because she and her husband, Jon, have three daughters: Khrystine, 14; Kaitlynn, 9; and Cassidy, 5.

“Unfortunately, there are a lot of violent

crimes that involve women and children, and that’s what behavior analysts work with most,” she said.

For that reason, Renoe doesn’t discuss school with her younger daughters.

“They just know I’m in school, and when I’m at home, I’m usually writing lab reports,” she said.

Renoe and her family plan to stay in Lincoln after she graduates. Because small cities don’t have a high demand for forensic scientists, Renoe is considering a doctoral degree and would like to teach and continue research.

Forensic science isn’t as glamorous—or effortless—as depicted on television. Renoe said a growing number of jurors think they understand the ins and outs of criminal investigations because they watch TV shows such as “Crime Scene Investigation.” Forensic scientists call this phenomenon “the CSI effect.”

“It’s made-up technology on television,” Renoe said. “Jurors want to see more evidence than can actually be recovered.”

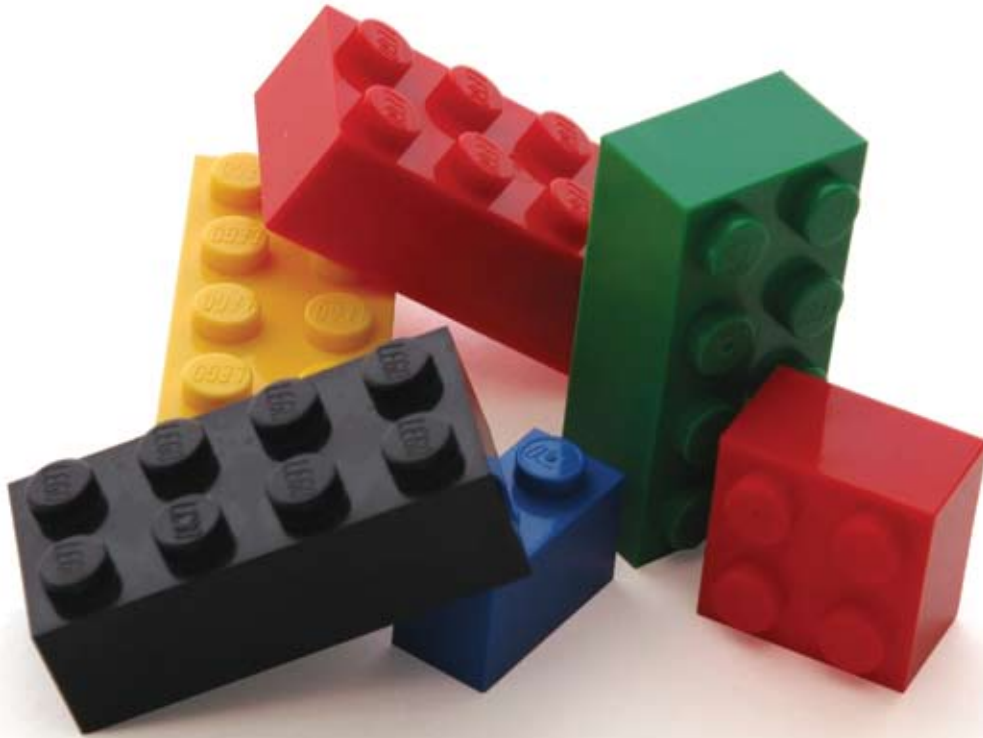
—Ashley Washburn



■ Janet Renoe uses an ultraviolet light to illuminate handprints on a door. Forensic specialists can use this process to collect evidence at a crime scene. Renoe, a research assistant for the Engineering Research Center, is working on a master’s degree in forensic science.

Photo by Ashley Washburn

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with Legos® when they were 5.**



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In Omaha, contact Alma Ramirez-Rodgers: aramirez@mail.unomaha.edu or 402-554-3618**

www.nuengr.unl.edu



Photo courtesy of the Nebraska Alumni Association

Kicking Off a New Tradition

During each home football game this season, College of Engineering students unrolled an 80' x 60' "Power of Red" flag in sections 9 and 10 in East Stadium. The college sponsored the flag to advertise itself and promote school spirit.

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