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necessarily reflect the opinions of the University of
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or the NU Foundation.*



Dear Alumni and Friends:

THIS EDITION OF *UNO MAGAZINE* covers a topic of high importance to the UNO campus and the metropolitan community — STEM or, Science, Technology, Engineering and Math education.

The need for America to improve and promote education in these critical academic areas has been called a national crisis as the U.S. has fallen behind other nations in both student proficiency and in numbers of men and women enrolling, graduating and working in these key occupational fields.

In 2012, UNO identified five academic priorities that were deemed critical to the campus' continued advancement as a respected metropolitan education and research institution of the 21st century. Among these was a commitment to a strong STEM program that was campus-wide, interdisciplinary and aggressive in its community outreach efforts with K-12 education.

The next year, to guide our efforts and demonstrate our commitment, we established a 17-member STEM Leadership team, developed a STEM Strategic Plan and put in place a STEM Community Chair Team to strengthen our ties to the schools and to events like the Nebraska Science Festival, Strategic Air and Space Museum STEM Conference, Celebration of the Mind and a host of other related activities.

As you might imagine, progress requires resources, and we are grateful to our many community, corporate and foundation partners who recognize the importance of UNO STEM as catalyst for advancing solutions, improving education and addressing the STEM need as a national model. We do this through multiple channels, including teaching/learning initiatives, research, service/outreach and building STEM capacity through innovative approaches to our infrastructure.

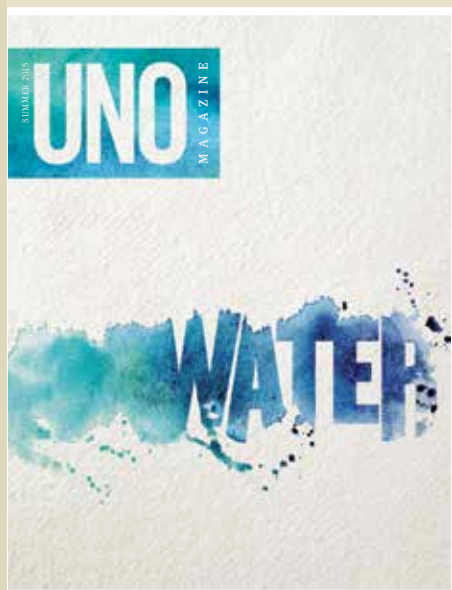
It is a credit to our committed cadre of faculty and staff who continue to move UNO STEM forward through creativity, collaboration and, sometimes, sheer force of will. I salute their efforts to date, the successes you'll read about in this publication, and the current and future students they are inspiring.

The next generation of American scientists, technologists, engineers and mathematicians is gearing up to help our nation retake the lead on a global stage. I'm very proud of UNO's role in this important work!

Until next time,

Chancellor John E. Christensen

“On Summer 2015



LETTERS TO THE EDITOR

UNO Magazine wants to know what its readers are thinking. Write us about the magazine or university. Letters must include writer's first and last names, address and phone number and may be edited for taste, accuracy, clarity and length. Submit a letter at unoalumni.org/unomag-led or write to the address on page 3.

RIDICULING A MIRACLE

In reference to your Summer 2015 issue of *UNO Magazine*, I'm compelled to express my great disappointment in the article "Water Into Wine" by Greg Kozol. As if the title wasn't insensitive and insulting enough, the first line of the article, "Actually, it's not that hard to turn water into wine," is an irresponsible mockery of a very sacred Christian rite. It suggests that the miracle of Christ turning water into wine at the wedding at Cana was no big deal. I fully understand that the ridicule of Christians was not the intent of the author. What I object to is using an obvious sacred reference to promote an article on the business of winemaking, etc., under the guise of "clever journalism." Never mind being sensitive to the religious backgrounds of your readers, both author and editor were being "clever" ... albeit in a sophomoric and insensitive way. It's ironic that another article attesting to the spiritual symbolism of water ("Holy Water") appears in the same issue. We live in a world where sensitivity to religious groups is an all-or-nothing endeavor—one would expect more thoughtfulness from state-supported institutions. You, as editor, ultimately bear this great responsibility. For my part, I expect much more from an institution of higher learning. With that, kindly remove my address from your mailing list. I'm not interested in receiving further clever journalism, nor any other UNO mailings, particularly those asking for financial support.

Michael McCandless, MA, 1993
Omaha

AT FIRST GLANCE

I just wanted to let you know that I really enjoyed *UNO Magazine*. This is my first look/read of this publication as I only started in February. I really like the political/environmental theme and how you and your team wove such intricate, thoughtful and purposeful connections between all these stories. As an alumni of two institutions, and having been working at institutions before that produce these, I have seen my fair share of this type of publication. This is the only one that actually interested me in reading. Even more than interested me, I was invested in the connections you made. All this to say, WELL DONE! I am sure you know that your office does excellent work but it is just another reason why I am proud to be a member of this community!

Jessi Hitchins
Director, UNO Gender and Sexuality Resource Center





WHEN I SHARE MY SECRET with others — especially the 30 & under crowd — their faces often contort into an expression of horrified confusion, as if I had just told them their house had burned to ashes or, worse, that Netflix servers were down or their selfie stick broke.

I don't have a cell phone.

It's Fred-Flintstone-prehistoric to some, akin to living without running water or electricity at home.

But what if you want to call someone?

What if you have an emergency?

Is it difficult to breathe without a phone?

Others recoil, thinking I'm some sort of anti-tech Ted Kaczynski Unabomber wannabe.

What kind of nut job are you?

Granted, I get that a lot for various other reasons. But I am *not* anti-technology. And I've somehow managed just fine, thank you, to overcome the incredible tribulations that accompany life without a cell phone.

The truth is, I'm just cheap.

Living sans-cell saves me hundreds of dollars I can spend on more important things like my mortgage, college tuition for my daughters or beer. Especially beer.

Also, I have just enough OCD in me to know that if I ever did get a phone I'd download Tetris and would never be able to stop playing.

And, heck, I'm around phones all day. My work phone — a landline — sits just 2 feet away from me for 40 hours a week. I have a landline at home, too. How connected do I have to be?

Again, it's not that I'm anti-tech. I manage a website and social media channels, after all, and know a smattering of html code. I have an electric razor.

Lately, I'm noticing different reactions from more than a few people who discover I don't have a cell phone.

Man, you're lucky.

I wish I didn't have a phone. Good for you.

What kind of nut job are you?

For many, technology has become a cruel master.

In this issue of *UNO Magazine* we look at the benefits of technology — along with Science, Engineering and Math. We explore ways music can help people who have trouble walking improve their gait. We show how a UNO-developed monitor can predict the onset of a COPD breathing attack. We test whether a goalie can stop a taco shot out of a cannon.

No, seriously.

I hope you like what we put together.

If you do... give me a call.

Anthony Flott
Anthony Flott
Managing Editor



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Young Alumni Academy Welcomes 6th Class



The UNO Alumni Association in September welcomed the sixth class of its UNO Young Alumni Academy, a nationally recognized and award-winning leadership development program designed for alumni 35 and younger to facilitate networking and professional growth.

To date, nearly 180 young alumni have completed the program. More than 40 young alumni have been accepted into the 2015-16 class.

The academy was founded in 2010. Members attend sessions held at unique locations on and off campus and this year will include a behind-the-scenes tour of Baxter Arena. UNO leaders also address members on topics such as athletics management, student focus and community engagement.

The academy has received several awards from the Council for Advancement and Support of Education, including the association's first-ever Silver award in CASE's International Circle of Excellence awards program. See more at <http://unoalumni.org/unoyoungalumni>

Members in the 2015-16 class and their employers:

Kristin Ballard CHI Health and Nebraska Wine Tours; **Lizz Barnhart** UNO; **Jessica Barrett** Scotts Miracle-Gro; **Nichole Baugh** NB Marketing and Creative Service; **Ashley Belmudez-Frakes** CA Home & Business; **Allison Birkemeier** Omaha Public Schools; **Catherine Bogacz** ConAgra Foods; **Jesse Brickner** Hancock & Dana; **Aaron Brown** Quantam Workplace; **Charles Chatham** ConAgra Foods; **William Citro** Nebraska Medicine; **Garrett Cook** ConAgra Foods; **Christina Copley** Infusion Brewing Co.; **Jessica Cullan**, Senior Vision Services; **Laura Espejel Rangel** OneWorld Community Health Centers; **Kiley Freeman** Union Pacific Railroad; **Hannah Gill** UNO; **Emily Grabow** West Corp.; **Jason Graham** Woodmen Life; **Brianna Hitt** UNL Statistics Dept.; **David Hopp** Agape Red; **Raebekah Howard** UNO-CBA (Mammel Hall); **April Jordening** Ralston Public Schools; **Amanda Juhnke** XO Group; **Ben Kirkland** ConAgra Foods; **Lauren Kirschman** ConAgra Foods; **Brandy Leeson** BDL Consulting; **Amy Lillethorup** Baird Holm; **Val Loseke** n/a; **Zachary Lutz-Priefert** Gross & Welch; **Kaleigh Molgaard** Titan Medical Group; **Theresa Nguyen** BKD; **Philip Niewohner** Olsson Associates; **Grant Purcell**; **Bina Ranjit** Proscribe, MD; **Kathryn Roshone** First National Bank of Omaha; **Jennifer Runte** ServiceOne; **Adam Schmit** FirstData; **Kathryn Schulz** Home Instead Senior Care; **Lacey Stazzoni** Kiewit; **Jamie Steenson** Omaha Public Schools; **Tiffany Wade** Renaissance Financial.



Have Taco, Will Travel

UNO ALUMNI ASSOCIATION STAFF, for a sixth consecutive year, welcomed students back to campus during Durango Days in late August by serving approximately 2,500 free "walking tacos" — corn chips in a bag topped with beef, lettuce, cheese and salsa. Free beverages also were distributed.

Lee Denker, president of the UNO Alumni Association, serves up a walking taco during Durango Days.



Alumni Night of Honor

The UNO Alumni Association will host the second Alumni Night of Honor Wednesday, Nov. 4., at the Thompson Alumni Center.

Sponsored by First Data Resources, Alumni Night of Honor highlights achievements by members of the worldwide UNO alumni network. Among the individuals to be honored:

2015 UNO Athletics Hall of Fame inductees J.D. Naig (wrestling), Pinar Saka (track & field) and Jenni Upenieks (softball). See more on page 25.

Young Alumni Achievement Award recipients are Kenny McMorris ('04) and Leslie Fischer ('99).

Outstanding Service honorees are Andrew Rikli ('07) and Dr. Thomas Gouttierre.

Alumni Achievement Award recipients and other distinguished graduates who have earned special recognition for service or professional accomplishments also will be recognized during the ceremony.

Automate your support of UNO

Small gifts make a big difference

As students at UNO study in science, technology, engineering and math, they are working toward a bright future where many of society's needs will be automated and our productivity will be amplified by the technology around us.

But UNO's students — in STEM fields and numerous other professions — need support from the world-wide alumni network to further their education, pursue their goals and build that brighter future.

Fortunately for UNO alumni who feel inclined to give back, the future is now. When you make a gift to the UNO Alumni Association through the UNO Annual Fund, you already can set your giving on autopilot and grow the power of your impact through automatic monthly giving.

A recurring monthly gift is the smart way to support UNO's students and alumni. By setting up a monthly credit card gift, you can give a small amount each month that adds up to a great amount over the course of a year. A gift of only \$8.34 monthly becomes a yearly gift of \$100, and just \$20.85 per month will qualify you for recognition in the UNO Century Club, which honors UNO Annual Fund donors of \$250 or more every summer in UNO Magazine.

Recurring monthly giving can be a great option for young alumni who don't think they can make a big difference (they can!), or busy professionals

who might not have time to respond to a mailing or student phone call.

Gifts to the UNO Annual Fund help the Alumni Association engage the worldwide UNO Alumni network. It's work — which includes annual alumni programming, events at the Thompson Alumni Center, the UNO Alumni Scholarship Swing, and this magazine — help keep UNO's grads connected with their alma mater. In turn, alumni who give back to UNO — whether through volunteer opportunities or gifts to UNO's campus, colleges and programs — help fuel the momentum of an ever-expanding UNO student experience.

To set up a monthly gift to the UNO Annual Fund, or to make a one-time gift of any size, visit unoalumni.org/give or call Joel Gehringer at 402-502-4924.

IT ADDS UP!

Often a monthly gift equal to a night out can become significant support for UNO over 12 months:

Monthly	–	Annually
\$8.34	–	\$100
\$20.85	–	\$250
\$41.67	–	\$500
\$83.34	–	\$1,000

PARTNERSHIPS

Insurance

- Are you in need of home, life, auto, health or life insurance? The UNO Alumni Association offers graduates insurance for these and other needs at discounted rates.
- See all the coverage available at www.unoalumni.org/insurance.

Travel

- The UNO Alumni Association is pleased to offer alumni discounted travel opportunities through a partnership with travel provider Go Next!
- Join fellow graduates on one of these upcoming Oceania Cruises:
 - Jan. 23-Feb. 2, 2016 — Island Paradise
 - June 13-24, 2016 — Regal Routes
 - Sept. 17-25, 2016 — Great Pacific Northwest

For more information, including detailed brochures for each trip, visit www.unoalumni.org/travel. Additional cruises are added periodically, so check the site frequently.

To receive a brochure for any of our trips by mail, call the association toll-free at **UNO-MAV-ALUM (866-628-2586)**.





Meeting 1 for Board 103

The UNO Alumni Association's 103rd board of directors convened in August for its first quarterly meeting. Sarah Waldman is the 92nd graduate to chair the association, founded in 1913 by the first class of graduates. Waldman (BA, 1994) is senior vice president of administration for Blue Cross and Blue Shield of Nebraska.

Pictured seated, from left (years of graduation in parentheses): Viv Ewing (1983, 1986), Alzheimer's Association of Nebraska; Enid Schonewise (1996, 2001), Westside Schools; Shari Munro (1986), Frankel Zacharia; Monique Farmer (2003), ConAgra Foods; Lee Denker, president; Sarah Waldman (1994), Blue Cross and Blue Shield; Tamara Williams (2003, 2009), Millard Public Schools; Penny Parker (1980), Completely KIDS; Traci Harrison (2000), retired.

Standing, left: Al Hansen (1984), First National Bank; Jim Sutfin (1993, 2002), Millard Public Schools; Andy Rikli (2007) Papillion La Vista Community Schools; Chris Denney (2005), Nebraska Medicine; Todd Rynaski (1995), Union Pacific Railroad; Steven Schmitz (1995; 2008), OPPD; Brian Allison (2005), Children's Home Healthcare; Brock Lewis, Student Regent; Matt Kardell (1990), First Data; Gary Seitz (1971), AFROTC Alumni Rep.; Randy Stevenson (1982), Baird Holm; Adam Marek (2000), Colliers International; Scott Vlasek (1995), UNO Aviation Institute, Faculty Senate Rep.; David Craft (1990, 1992), Wells Fargo.

Not pictured: Scott Durbin (1984), Harry A. Koch Co.; Laurie Ruge (2001), Gordmans Management Company; Shonna Dorsey (2003; 2010), Interface Web School; Tina Scott Mordhorst (1989), UNMC Physicians; Chancellor John Christensen (1974).



Photo by Evan Lucdes

Eighth Class of UNO Alumni Scholars begin Maverick careers

The UNO Alumni Association welcomed its eighth class of UNO Alumni Scholars at the start of the fall semester. Four students received UNO Alumni Association Scholarships, awarded to graduating high school seniors who have demonstrated leadership and involvement during high school.

Recipients also must have a minimum ACT composite score of 24 and either rank in the top 25 percent of their class or have a minimum cumulative GPA of 3.5 on a 4.0 scale. The \$2,500 annual scholarships are renewable for up to four years.

The association now is supporting 16 UNO students with UNO Alumni Association Scholarships.

Pictured are 2015-16 inaugural UNO Alumni Association Scholarship recipients Jennifer Briggs, Norman Community High School (Bloomington, Ill.), Stephanie Freund, Atlantic High School (Atlantic Iowa); Adrienne Cavill, Kearney High School (Kearney, Neb.), Breanna White, Treynor High School (Treynor, Iowa).

Bios of the four recipients and other UNO Alumni Scholars are available at www.unoalumni.org/scholarships



Jackie Lynch ('79), Paris



Nathan Kirkland (BA '10, MS '13) Grand Teton National Park, Wyoming



Kay Talty Corell (No hat, '57), Terence Bay lighthouse in Nova Scotia, with daughters Beth, Pam, and Carolyn



Lyle Kwiatkowski (student), on Kjeragbolten, a boulder located on Kjerag mountain in Rogaland, Norway

Showing the O

Paris, Krakow, Peru. Minnesota's Apostle Island and Wyoming's Grand Tetons. Like UNO graduates, the O sure is getting around.

The UNO Alumni Association's Show the O campaign is as strong as ever with students, alumni and other Mavericks flying the school flag in all 50 states and more than 70 countries.

Show the O was instituted in 2013 to celebrate the association's 100th anniversary and to emphasize the spread and stature of the worldwide UNO alumni network — now numbering more than 105,000 living graduates. The campaign provides alumni, students and friends with "O" flags to display in photographs where they live or travel. Photographs are displayed on an interactive world map at <http://showtheo.com>.

Request a flag at showtheo.com — we'll send you one for free and pay for its way home.



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A Swinging Good Time

Association raises \$40,000 for student scholarships at 35th annual UNO Alumni Scholarship Swing

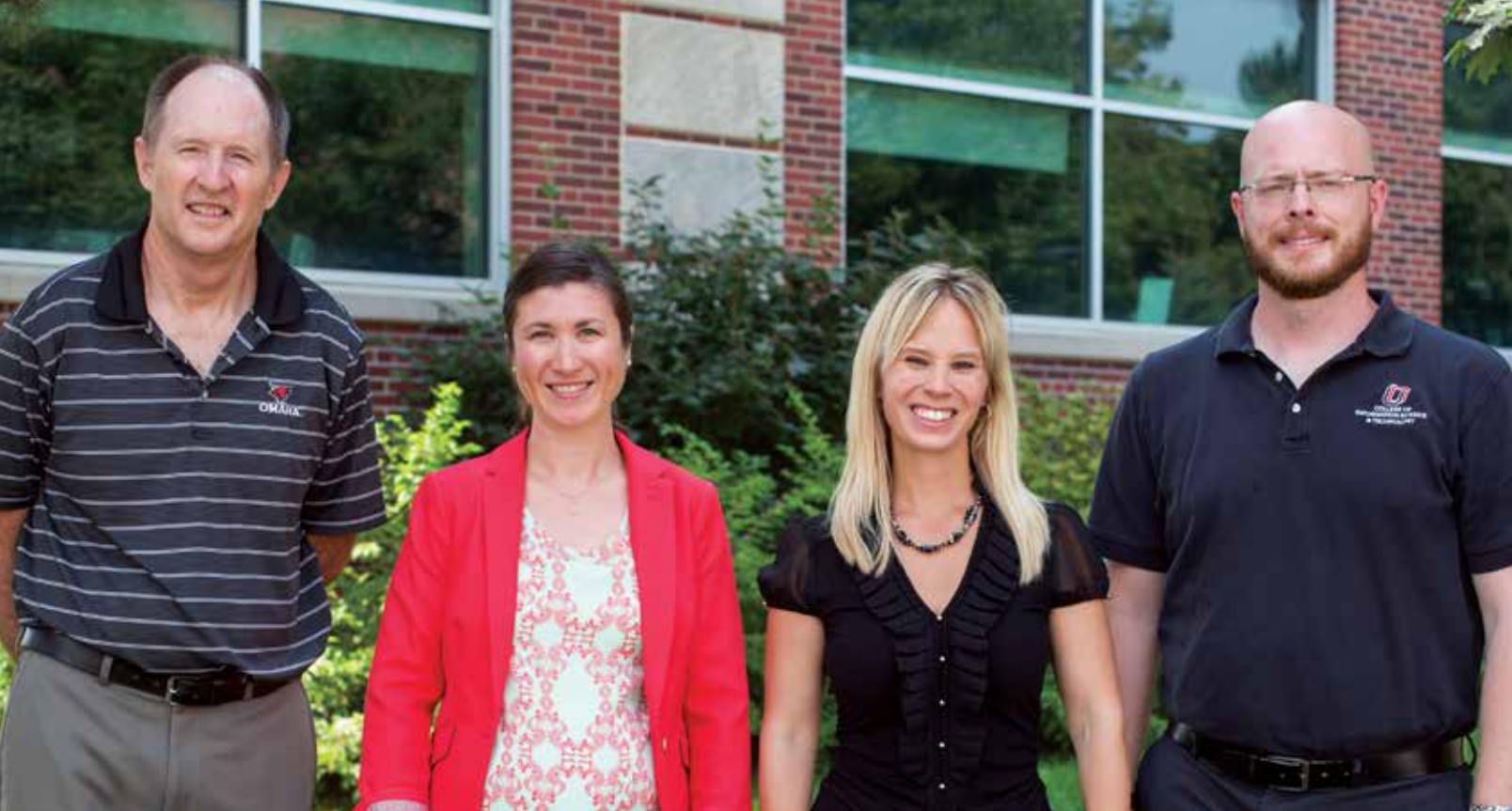
The UNO Alumni Association hosted the 35th annual UNO Alumni Scholarship Swing Aug. 31 at Indian Creek Golf Course, netting \$40,000 in support of students.

It was the first time the tournament had been hosted at the course since 1999. The association's largest annual fundraiser, the Swing now has raised more than \$865,000 since UNOAA began hosting the swing in 1995. More than 120 golfers and 55 sponsors participated in the tournament.

The money raised supports various association-sponsored student scholarships. That includes UNO Alumni Association Scholarships, \$2,500/year grants to graduating high school seniors who have demonstrated leadership and involvement during high school. The scholarships are renewable for up to four years and a new class of scholars is introduced each year.

UNO Alumni Scholars were at the tournament to thank Swing sponsors and participants.

UNO graduate Jacob Rehder ('03) chaired the committee that oversees the tournament. Other committee members include Ben Burton ('07), Chris Denney ('05), Justin Disch ('07), Scott Durbin ('84), Al Hansen ('84), John Hemmer, ('08) Mark Lampe ('91), Andres Torres ('13) and Jeff Turley ('76).



From left, UNO Professors Neal Grandgenett, Christine Cutucache, Angie Hodge and Brian Dorn.

UNO STEM Chairs Standing Tall

**Four professors
engage students
of all ages
in Science,
Technology,
Engineering
& Math**

*By Colleen Kenney Fleischer,
University of Nebraska Foundation*

She learned best as a kid by using her hands, not memorizing Hamlet.

"I really wanted to work on cars for the rest of my life," says Christine Cutucache, Ph.D., a highly regarded young tumor immunologist who holds the first Dr. George Haddix Community Chair in Science at UNO.

She liked hanging out with the horses on her mother's ranch in Wisconsin and doing chores with a practical outcome, not sitting through boring lectures.

"I hated school."

She laughs.

"I absolutely hated school. I planned on being a mechanic or restoring classic cars."

Cutucache says she was lucky that a few high school teachers brought science to life for her in a hands-on way.

That's what she's doing now as the Haddix Community Chair of Science. She's bringing life, and love, to a subject that should be innately exciting for kids – many of whom are like the one she used to be.

STEM stands for science, technology, engineering and mathematics. UNO now has four community chairs who serve as collaborative leaders in its STEM efforts—a team of talented educators charged to steep young people in hands-on learning experiences that matter, that sink in, while meeting critical workforce needs of the community.

Besides Cutucache, UNO's STEM team consists of Neal Grandgenett, Ph.D., who holds the Haddix Community Chair of STEM Education in the College of Education; Angie Hodge, Ph.D., who holds the Haddix Community

continued on page 12



STEM teachers at UNO include Biology Professor Jeff French (right), who provides many hands-on opportunities for students, including Neuroscience and Behavior Ph.D. student Jon Cavanaugh.

Chair of Mathematics in the College of Arts & Sciences; and Brian Dorn, Ph.D., who holds the Union Pacific Community Chair of Computer Science Education in the College of Information Science & Technology.

The four community chairs build relationships among faculty members of all backgrounds and build bridges between UNO and community partners, such as local businesses and the Chamber of Commerce.

Says Grandgenett: “We strive to lead from within to help our exceptional colleagues, campus and community to increasingly form collaborative partnerships, and help Omaha and UNO to truly become the place to see where STEM innovation and community partnerships are in action.”

Grandgenett became UNO’s first STEM community chair five years ago. He used to be a middle-school math teacher. He now works with colleagues across campus to develop STEM education to prepare students to become STEM teachers.

UNO is a national model in preparing teachers in STEM areas and in providing a variety of options in the path students can take to becoming STEM educators. For example, UNO students can get a STEM-discipline degree as well as a College of Education degree in achieving teacher certification, or if they already have a degree, they can be part of the Teacher Academy Program—a graduate program that lets students with a STEM bachelor’s degree become a certified teacher.

A few other ways the STEM team and colleagues are helping grow STEM awareness:

- **THE EUREKA!/STEM ENRICHMENT PROGRAM FOR MIDDLE-SCHOOL GIRLS** This program begins with a four-week summer camp focused on STEM, physical activity and well-being. The girls engage in inquiry-based STEM activities led by UNO faculty and students. (“Inquiry-based” means engaging students as much as possible in problem-solving activities.) The goal is to get these girls to consider STEM careers down the road.
- **THE MATH TEACHERS’ CIRCLE** UNO hosts a monthly event for area math teachers, who learn inquiry-based mathematics from UNO professors and professors from other universities.
- **SPARCS (STRATEGIC PROBLEM-BASED APPROACH TO ROUSE COMPUTER SCIENCE)** This new program is a National Science Foundation-funded initiative that trains middle-school teachers to integrate computational thinking into core content areas. Dorn and Grandgenett are co-principal investigators on this grant (along with other UNO Computer Science faculty).
- **NE STEM 4U** This pre-professional training program for UNO students focuses on teaching, research and mentorship while also providing high-quality, engaging hands-on experiments for underprivileged young people during after-school programs throughout the school year.



Since being named the Haddix Community Chair in Science a year ago, Cutucache has been reaching out to the campus and the community to promote STEM education in many innovative ways and lighting fires — sometimes literally.

She mentors young mentors. She helps the undergraduate and graduate students in a UNO pre-professional training program called NE STEM4U as they help kids explore science in afterschool programs every day of the academic year.

They build and race rockets on clotheslines, using balloons to propel them...

They scrape tissue from inside their own cheeks to study their own DNA...

They create tornadoes of fire...

"I will hear some middle-school girls walk in and say, 'Oh, this is not for me. I do not like science.' Then when they leave after doing science, you hear them say, 'This is science? I love science!'"

"And that is cool."

NE STEM 4U has offered its informal after-school programming to more than 2,000 kids in the Omaha Public Schools system, starting with the most disadvantaged schools. NE STEM 4U was in eight OPS elementary and middle schools last year. It's likely to be in nine or 10 by the start of this school year.

Hands-on learning builds confidence, Cutucache says. Studies indicate that how students perceive themselves — whether they think they're good in science or not — influences them going into tests like the SATs as well as in the careers they choose.

It's been fun watching her UNO students grow, too, she says. This past April, a grad student she mentored toward his degree in tumor immunology, Tyler Herek, won the National Science Foundation Graduate Research Fellowship. It's considered the highest honor a graduate student can be awarded.

Angie Hodge's goal to help make UNO mathematics and mathematics education a nationwide leader and role model for innovation. She is helping transform the classroom atmosphere in the mathematics department.

You won't find her calculus students sitting quietly in rows in her classroom. They're talking, teaching one another. You won't often find her in front of her classroom. She promotes inquiry-based learning, giving her students tasks that require them to solve problems, explore and communicate. Once students "own" their own learning experiences, they understand mathematics in a much deeper way.

"Many classes are now hands-on," Hodge says, "and students are succeeding!"

The four STEM leaders feel lucky to hold their chairs. (And for

Dorn, the Union Pacific Community Chair of Computer Science Education, it also may feel like fate — his grandfather worked his entire career for Union Pacific.)

Dorn says he feels privileged to work with such devoted people in an environment that supports discipline-based education research, classroom innovation and engagement with metropolitan and

statewide initiatives to advance STEM education. His colleagues at other universities have been surprised with how quickly UNO has been able to ramp up new teacher-training programs in information technology.

"Our research efforts to develop innovative educational technologies are changing the way students approach STEM courses and are helping us better understand how our 'always-connected' students learn," he says.

The Haddix Community Chairs are named for Dr. George Haddix, a UNO alumnus ('62) and former UNO mathematics professor who founded a series of highly successful STEM companies.

"This community chair model is just so impressive," Cutucache says. "And Dr. Haddix — oh, my gosh — what a wonderful person. He's absolutely amazing, down to earth."

"He's been so good in his life translating his vision into this. It's just the perfect model."

If you also would like to donate money to help students fall in love with science and other STEM subjects, please call the University of Nebraska Foundation at 800-432-3216.

**I absolutely hated school.
I planned on being a
mechanic or restoring
classic cars.**



At left: Children at Aim For The Stars Summer Science and Math Camp. Above: Participants in the Calculus Bee.

Teach Your Children Well

At UNO, that happens year-round with STEM courses for area youth

College students aren't the only ones who can benefit from UNO's STEM offerings. Using everything from explosions to Legos, university faculty and staff encourage creativity, critical thinking and collaboration for P-12 students.

The lessons aren't just for children, either. UNO continues to be a national model in helping P-12 teachers bring STEM concepts into their classrooms, too.

Here are a few of the programs and events that make UNO a leader in early STEM education.

AIM FOR THE STARS

The Aim for the Stars Summer Science and Math Camp is one of UNO's longest-running STEM programs having begun in 1998. The program regularly draws hundreds of kids to campus each summer.

In 2015, 1,850 kids attended at least one camp.

Director Connie O'Brien says kids have come from as far away as Pennsylvania to learn about everything from astronomy to zoology.

Many campers return for multiple years with some even coming back as counselors or UNO students.

"There's been too many to count," O'Brien says.

CALCULUS BEE

It's hard enough doing calculus. Now try doing it in a competition.

In April, more than 600 high school students cheered on classmates competing in the third annual Calculus Bee.

"It really is a way for us to reach out to the community in a very positive way," UNO's Janice Rech says.

In addition to visiting campus, participants also get the chance to see math put to music through "Calculus: The Musical."

C.A.P.O.W!

With explosions, electricity and experiments featuring liquid nitrogen, this science show never fails to amaze.

C.A.P.O.W! is short for "Chemistry and Physics on Wheels" and it features UNO professors presenting science lessons to schools and clubs.

"Some of the demonstrations are state-of-the-art, some just very flashy," says UNO Physics Chair Dr. Renat Sabirianov.

The goal is to show kids that science is anything but boring.

HOME-CODING

For one day a week during the school year, accounting professor Burch Kealey's kitchen turns into a computer lab.

For the last two years, he has taught his son and other kids how to write computer code. The youngest is nine. The oldest is 12.

Kealey got the idea after searching for coding classes for his son.

"There's nothing serious available for kids," Kealey says.

At just an hour of lessons once a week, this dad has already seen impressive progress.



From left: The IT Innovation Cup, Lights On After School October celebration, and C.A.P.O.W.! demonstration.

IT INNOVATION CUP

Every year, UNO invites local teens to identify problems, brainstorm tech solutions, scope the market and make their pitch.

The IT Innovation Cup encourages high schools to find the most innovative, IT-based solutions to a specific “challenge area.”

The competition stretches from fall into spring and UNO students act as mentors, helping teens refine their ideas and presentations.

KIEWIT TEACHER DAY

Over the last two years, engineers and teachers have come together to learn from each other during Kiewit Teacher Day.

The partnership between Kiewit Corporation, UNO and UNL brings together engineers and teachers so engineers can learn about managing people and problem solving while teachers learn how engineering design can help kids learn.

“It’s a very collaborative discipline and environment,” says Neal Grandgenett, UNO’s Haddix Community Chair of STEM Education.

Thanks to strong success at UNO, Kiewit plans to expand teacher days to other states.

LIGHTS ON AFTER SCHOOL

You’ll find robots, slime and a whole lot more as UNO hosts the “Lights On After School” celebration each October.

Collective for Youth stages the event. The nonprofit provides support to out-of-school programs serving thousands of local kids.

UNO’s STEM Outreach Coordinator Amelia Squires says the Office of STEM Education and student-run group NE STEM 4U host a wide variety of hands-on activities for kids and their families.

“It really is a huge collaborative effort,” says Squires.

NEBRASKA SCIENCE FESTIVAL

The Nebraska Science Festival is an April tradition for UNO as faculty and staff take part in the statewide celebration of science.

This past year, families visiting UNO could check out fossils, launch rockets and play with robots. Plans are already underway to make 2016 bigger and better.

NE STEM 4U

NE STEM 4U is a volunteer organization where undergraduate students—and a handful of graduate students—donate time to teach OPS students about STEM topics after school.

Since 2013, students have volunteered more than 5,000 hours. Assistant Professor Christine Cutucache says each year they expand to more schools.

“There’s a huge need.”

NOYCE SCHOLARSHIP GRANT

A \$1.2 million grant from the Robert Noyce Teacher Scholarship Program is helping UNO train the next generation of math teachers.

This year, the highly competitive grant funded the hiring of six Noyce interns who spent 240 hours learning more about mathematics education.

Additionally, four students were chosen as Noyce scholars, receiving financial assistance to allow them to focus on their studies.

The program will continue for an additional five years.

Associate Professor Angie Hodge says it’s turning students into leaders.

“We mentor them in leading programs on campus and in the community to help make mathematics more accessible and more fun for a wide range of people.”

SPARCS

Launched this year, UNO’s Strategic Problem-based Approach to Rouse Computer Science (SPARCS) program is training middle school teachers how to bring computer science lessons into the classroom.

Area teachers are working with UNO professors to create curriculums that promote STEM concepts.

UNO’s Harvey Siy says he hopes the program will help teachers change kids’ perceptions about the field.

“It’s not just guys in a dark basement or cubicle drinking Mountain Dew.”

TECHADEMY

Kids learn about everything from 3D modeling to mobile app development at UNO’s Techademy.

During the summer, the College of Information Science & Technology (IS&T) offers weeklong sessions for students ages 11 to 18.

There are courses about graphic design, robotics, programming and more.

“IT is infused in everything we do nowadays,” explains UNO iSTEM Program Coordinator Angela McGraw.

It’s no wonder that interest in the program grows with each year.

— Sam Petto, University Communications



Glacier Growth

UNO's biggest outdoor classroom, Glacier Creek Preserve Expands with acquisition of 104 acres

FOR YEARS, UNO'S GLACIER Creek Preserve has been a big part of UNO's STEM outreach efforts.

This summer, it got a whole lot bigger.

UNO acquired its first portion of the preserve in 1959 when Arthur and Antoinette Allwine deeded what then was known as Allwine Prairie to the biology department. By 2014 the outdoor classroom had grown to 320 acres spreading north and west from 144th and State streets.

In August, UNO acquired an adjoining 104 acres from Omaha-based NewStreet Properties. The new tract, called the North Conservation Area, pushes the preserve to 424 total acres. UNO has an option to buy another 101 acres.

"What is unique about this site, maybe even nationally, is it's an entire watershed, an entire drainage, within 30 minutes of a major metropolitan area," says Tom Bragg, UNO Preserves director and a biology professor.

For more than 56 years the sanctuary has hosted students and nature enthusiasts studying the diverse grassland filled with native plants, insects, birds and small mammals.

"We have a lot of different habitats," Bragg says. "It is prairie, but it is a prairie with associated habitats because there are woodlands and creeks."

Restoration on the new plot will take place during the next few years. The addition includes high ground that allows for natural drainage free from surrounding residential areas. It also includes two acres of wetland.

Amelia Squires, UNO's STEM Outreach coordinator, says it is the perfect place for students to learn outside the classroom.

"It is all about field science and doing the research in the environment, as opposed to being in the classroom."

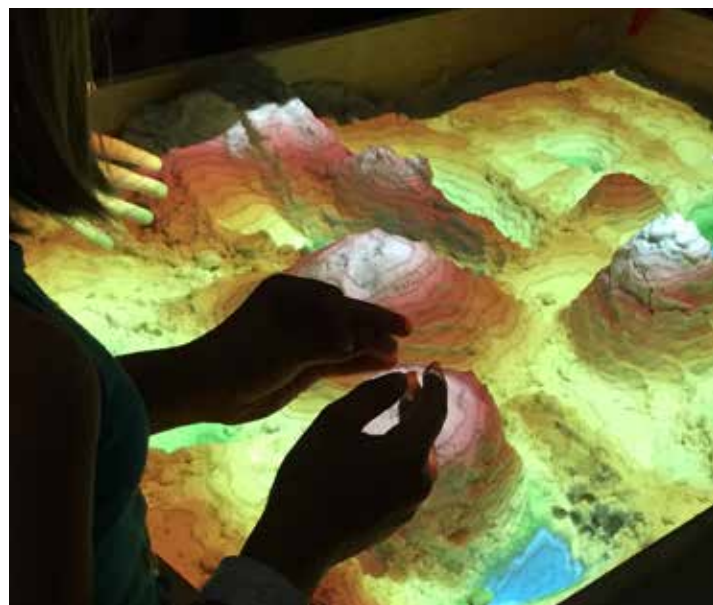
The preserve includes the Barn at Glacier Creek, a century-old structure donated in 2012 and renovated to provide space for students to conduct research after a day in the field. It can also be reserved for classes by UNO professors or anyone in the community wanting to study in a natural environment.

"It's not just UNO," Bragg says. "This is a community resource."

Summer programs also take place at the preserve, and teachers from nearby elementary and high schools use the land to collect water samples, soil samples and insects, to study prairie burning and even to stargaze.

"This is not the same kind of experience that students will get in a lab or a city park," Squires says. "Some people think they have to go to western Nebraska or somewhere rural but do not realize that 20 minutes from UNO is a natural preserve where you can do the same kind of things."

— Nolan Searl, University Communications



Science in the Sand

VACATIONS ON THE BEACH came to an end with the start of the fall semester, but some UNO students — and faculty — continue to play in the sand.

For credit.

This summer, UNO faculty built the "Augmented Reality (AR) Sandbox," an interactive, topographic, contour-line generator used in STEM classrooms. The device looks like a normal sandbox except that a projector and Xbox Kinect 3D optic sensor are positioned overhead. Beneath the sandbox, a computer uses a Linux-based operating system to read data from the Kinect and feed it to the projector.

As sand is moved around, the calibrated Kinect sensor gathers the changing elevation data and the projector converts it — in real time — into a visual representation of contour lines and colors indicating different levels of elevation. Shades of blue resemble anything at or below sea level; green and tan represent the grassland elevations; orange-red hues designate mountain ranges. Built high enough, mounds of sand even can develop white snowcaps.

Connie O'Brien, director of UNO's Aim for the Stars summer camp, first saw a similar sandbox on YouTube. Recognizing a mutual educational benefit, she approached Geography/Geology Department Chair and Associate Professor Robert Shuster, who agreed to help purchase the items needed to make one.

"This summer we used it to introduce 4th- and 5th-grade Earth Science campers to the idea of contour lines and mapping and to extend that learning with the 6th through 8th graders in geology camp," O'Brien says.

The AR Sandbox has rapidly gained popularity worldwide since its creation four years ago and adaptations have been numerous. After this summer's camps concluded, Adjunct Professor Paul Hunt gave the sandbox its first upgrade at UNO: a new graphics card. With it, water and lava flows now can be simulated over the sand's topography.

Now that UNO students are back for the fall semester, it's their turn to play in the sand.

"The augmented reality sandbox allows us to build three-dimensional landscapes where the contours and colors change in real time, freeze the image, then return the sand to a flat surface, illustrating how three-dimensional topography is represented in maps," says Assistant Professor of Geology Ashlee Dere. "The box will also be used in upper-level courses such as Geomorphology and Hydrogeology to model water movement and landscape evolution."

— Matthew Barros, University Communications

Heads in the Stars



UNO research includes NASA partnerships across several fields

UNO CONTINUES TO BODILY go where no student has gone before.

Yep, space ... the final frontier.

Across campus, students and faculty work on several projects in association with NASA researchers. And with good reason.

"We, as a society, rely on space and space technology in our day-to-day lives more than ever," says UNO Professor Scott Tarry. "You rely on your GPS and satellite communications in one way or another.

"We rely on space just to live our normal ways now in ways that a lot of people don't appreciate."

Following are several ways UNO is studying space.

NASA Space Grant

In 1989, UNO received a space grant from NASA. Only one institution in every state receives it.

The grant started at \$25,000 a year but in recent years has topped \$800,000. The money is used to fund NASA research projects that are worked on by UNO faculty and students. It also is used for curriculum development.

"There is an actual NASA presence, not just in Nebraska, but here at UNO," Tarry says. "Space is part of our lives, and we are a connection to space that people do not realize."

Mars Robots

In the College of Information Science & Technology, Professor Raj Dasgupta is working on robots capable of exploring the surface of the red planet.

The project ModRED (Modular Robot for Exploration and Discovery) is funded by the NASA grant and was begun in September 2011. The purpose of the project was to construct a new type of robot able to navigate the unpredictable and uncharted surfaces of an alien planet.

"This is called a self-reconfigurable robot," Dasgupta says. "Or



A robotics demonstration during a visit by Senator Brad Ashford to the College of IS&T.

a robot that can change shape. It is sort of like what transformers do."

Instead of changing into a car or a tank, these robots can take the shape of a worm when moving across a flat surface, or it could spring legs and crawl up a rocky surface like a spider.

More projects are on the way, Dasgupta says. He and his team of researchers have made a pitch to NASA about constructing robots that can explore the icy surface of Europa, one of Jupiter's moons.

High Altitude Learning Over Nebraska

HALON is another project funded by the NASA Space Grant. An outreach program to local schools, HALON's mission is to give youth experience designing and testing experiments.

High school students from Omaha North and Bellevue West are mentored by UNO students from the College of Information Science and Technology as they build and test their own experiments.

Every so often you will see a group of 20 or 30 students huddled around a huge latex weather balloon in UNO's Pep Bowl. Once the students have an idea for what they want to test — like measuring solar radiation or the amount of dust in the atmosphere — UNO helps make it a reality.



Imagination takes flight with a High Altitude Balloon Launch at PKI

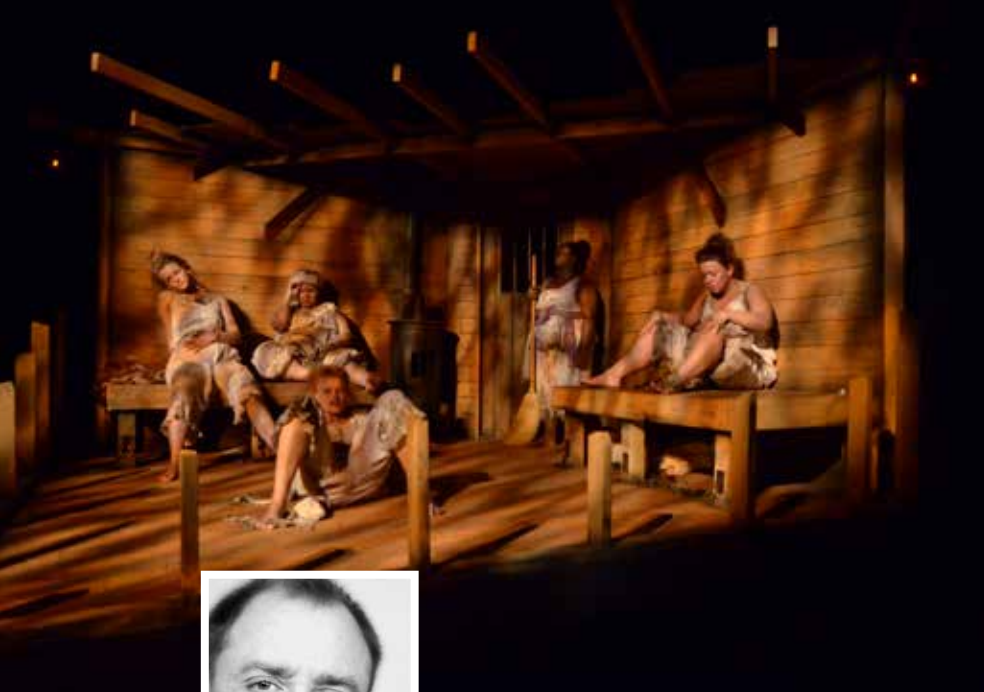
Biomechanics Research

One of NASA's largest priorities is the health of its astronauts. Professor Sara Myer and UNO researchers in the Biomechanics Research Building are working with NASA researchers at the Johnson Space Center to help astronauts adjust to changing atmospheres.

"When they go into space their sensory environment is totally different because there isn't gravity," Myers says. "Plus when they return to Earth, they have to readjust."

UNO researchers have found that virtual reality and tactile stimulation can help those who spend time in space adjust to changes in environment faster.

— Nolan Searl,
University Communications



Science on Stage

All the world's a stage
for math, engineering

WHEN ASKED HOW HIS craft relates to STEM fields, Associate Professor of Theatre Robbie Jones says it's very clear: "Math and engineering are the building blocks of everything we do."

Jones, who also serves as technical director for UNO Theatre productions, describes his work as constant problem solving. The goal: to translate the sketches, drafts and models of others into real-world objects and settings.

"Engineering means 'to construct,' and that's what my job is," Jones says, "Taking an idea and making it truly physical, whether it's as simple as a box or as complex as a machine."

Geometry and basic math play a major role in the planning and building of a stage, including its rake, or angle. Raked stages often are used to give the audience an illusion of depth or distance. But too steep of a rake can cause problems for the actors' joints and muscles.

"I'm always asking myself not only how can this [design] be done, but how can it be done safely?" Jones says.

UNO Theatre's Spring 2013 production of "Female Transport" offered Jones a unique challenge—simulating the movement of a ship on the ocean.

"My first reaction was that I wanted to flood the theatre," he says, "which wasn't feasible."

Rather than having the actors imitate the movement, which he likened to cheesy scenes from "Star Trek" in which the cast simulated turbulence by jostling themselves around in their seats, he decided to construct a set piece, operated by four stagehands, which could be leveraged to toss actors around the "boat" as if they were amid churning waves.

After crafting and testing six quarter- and half-scale models, Jones found the ideal balance. Though calculated measurement is vital to stagecraft, he says, there is never one clear-cut way to answer a technical theatre dilemma.

"It always starts out as 'Wouldn't it be neat if...?'" Jones says. But the outcome relies heavily on the amount of time allotted, the physical resources available and the materials that will work best for the particular show.

"It's all about planning," he says. "The more you can do out front, the more successful you'll be at end."

— Noelle Lynn Blood, Communications Specialist,
College of Communication, Fine Arts and Media



Big Data's Big Impact on Retention

THE BIGGEST PROBLEM FACING higher education today isn't getting students to go to school—it's getting them to finish once they've enrolled.

Over the past three years, UNO's Office of Academic and Student Affairs (OASA) and Office of Institutional Effectiveness (OIE) have designed a program to improve completion rates using only two sets of data: credit hours and years it take to graduate.

The program, called PACE, sorts students into graduation trajectories of four, five or six years. By dividing the average number of credit hours needed to graduate into one of these three timeframes, the program can determine if a student is falling behind.

"Knowing those two things changes how our advisors and faculty counsel students," says OIE Director Hank Robinson, who developed the program.

The data from the program can be viewed broadly, at the university or college level, allowing for larger program

changes or, specifically, at the student level, supporting personalized intervention and interaction.

"Far too often in the past we've relied on students self reporting or failing and then there is not a lot we can do once they've reached that point," says Assistant Vice Chancellor for Student Affairs Jonathan Benjamin-Alvarado. "This actually allows us to see things as they are occurring and intervene at a more appropriate time."

The program supplements previous efforts to address retention, which have already risen from around 70 percent to almost 80 percent. With this new program, Benjamin-Alvarado says, the goal is to get close to 90 percent.

Robinson says that what makes the program so successful—and such a breakthrough—is that it's a simple solution to a seemingly complex problem.

"Essentially, we didn't look at why people don't graduate," he says. "We looked at why they do."

— Charley Reed, Associate Editor



From left: UNO Student Regent Brock Lewis, hockey player Kirk Thompson, President Bounds, hockey player Avery Peterson.

New University of Nebraska President Hank Bounds:

UNO Will Help Make NU a 'Giant in Higher Ed'

ON APRIL 13, DR. HANK BOUNDS began his tenure as the seventh president of the University of Nebraska. Bounds comes to Nebraska from his native Mississippi, where he started his career as a high school teacher before rising to principal, superintendent, state superintendent and commissioner of higher education. Bounds and his wife, Susie, have two children, Will and Caroline.

He visited the UNO campus for two days in August. UNO Student Regent Brock Lewis caught up with President Bounds to learn more about his hopes and dreams for the university—and UNO's vital role in achieving them.

Lewis: What would you like the UNO community to know about your plans for your new role?

President Bounds: I've always wanted to be in a position where I could help change the world. The University of Nebraska presidency is that position. We have an opportunity to be a true giant in higher education, and I'm honored to be a part of it.

Lewis: What about UNO stands out to you?

President Bounds: Each time I visit campus, I'm energized by the momentum and sense of possibility here. First, UNO is a campus that puts students first. From academic programs that meet student needs, to financial aid and support programs that keep a UNO education within reach, to new facilities like Baxter Arena that are enhancing the student experience—and more—UNO's focus on student success is clear.

I'm also impressed by the talents of UNO faculty. The Biomechanics Research Building is putting UNO at the forefront of a critical field. The work of the College of Information Science & Technology is building a pipeline of STEM workers for Nebraska. The Weitz Community Engagement Center, and the faculty and staff associated with it, are second to none. And those are just a few examples.

Lewis: What opportunities do you see for collaboration between the NU campuses?

President Bounds: If we want to become truly great, we need to focus on a few areas where we think we can be the best in the world. Engineering and information science, early childhood education, national security and defense, water and agriculture, and rural development are some areas where I think

the University of Nebraska is positioned for global leadership. Each of these involves complex challenges that one campus can't solve alone. We'll need the talents of UNO faculty, staff and students to be successful.

To me, that's a great strength of the University of Nebraska. Each campus has unique strengths and a distinct mission. But we also have an opportunity to be better together—one university working to serve Nebraskans.

Lewis: How can NU continue to attract students from around the country and the world?

President Bounds: Soon more than 70 percent of all jobs in Nebraska will require education beyond high school. That means we need to be very focused on attracting more talented students to our university and state. One important way to do that is by telling our story more effectively—ensuring people in our state and beyond know about the impressive education and research happening on our campuses. University of Nebraska alumni are some of our best ambassadors and can help us do that.

Lewis: UNO has been known as a school that serves many "non-traditional" students. Do you think there's such a thing as a "traditional" student?

President Bounds: The definition of a "traditional student" is more fluid every day. Some of our students are from urban settings, some are from rural areas. Some are teenagers, others are lifelong learners. Many of our students have families or full-time jobs. Some are military learners. Some have lived in Nebraska their whole life and some come from China, Brazil, India or Japan.

UNO does an outstanding job of meeting the needs of such a diverse student body. Many UNO students are the first in the families to go to college or come from backgrounds that have historically been underrepresented in higher education. And of course one of the greatest points of pride on campus is how well UNO serves military students.

Lewis: What does it mean to you to be a Maverick?

President Bounds: Being a Maverick means forging your own path. I have tried to do that in my life—having been helped along the way by teachers and others who saw the "maverick" in me and believed I could go to college and have the career I've had. I get up every day with the goal of helping students recognize their own potential so they can change their lives for the better.

It Just Doesn't Get Any Better

**Baxter Arena to host first
UNO event Oct. 23**

IT'S ONLY A MATTER of days now.

On Oct. 23, Baxter Arena will host its first official UNO sporting event as the UNO hockey team takes on Air Force.

Finally, the Mavericks will have a home to call their own.

And not just for hockey. Baxter Arena also will be home to the UNO volleyball and men's and women's basketball teams. UNO commencement ceremonies and other university events will be hosted there, and space will be available for intramural teams to play and practice.

The community will put it to good use, too. Numerous high schools are hosting their graduation ceremonies at Baxter Arena and dates are filling with concerts, entertainment, shows and more. Of course, there will be plenty of skating on the community sheet of ice.

Here are a few facts to know about Baxter Arena.

Why is UNO building an arena?

Until now, UNO paid to rent multiple facilities around the metro area and did not take in any concessions or premium seating revenue. In addition, the UNO men's hockey team lacked a consistent practice location. UNO is also the only Division I (DI) hockey team in the four major conferences (NCHC, Big Ten, WCHA and Hockey East) without a dedicated playing facility. This puts strain on the time and finances of the UNO hockey program in a way not seen at any other DI institution in the country.



Baxter ARENA

Arena Goals

The goals of building an arena are:

- Recruit the nation's top student-athletes
- Recruit the top students from across the country
- Elevate UNO's community connection
- Heighten the campus experience for students
- Provide more UNO athletes a home ice/home court advantage on campus

Location

The arena is just south of Aksarben Village on Center Street, between 64th Avenue and 67th Street.

Sizes

Baxter Arena is 205,000 square feet. That includes a 20,000-square-foot main arena, 21,000-square-foot concourse area and 17,100-square-foot community ice.

Food

The arena will house five concession stands — four in the main arena area and one in the club area. There will be lots of good eats

to choose from with traditional fare such as hotdogs and nachos plus regional favorites provided by partners including Godfather's Pizza, Jimmy John's and Voodoo Taco.

No waiting

The arena will house plenty of restrooms with easy access. Men's and women's restrooms are located in each corner of the main arena.

Getting There, Getting Home

Infrastructure improvements have enhanced the ability to move traffic in and out of the arena for events and for Aksarben Village. There will be at least five entrance/exit points near the arena:

- 67th Street to Grover
- 68th Street to Mercy Road
- Castelar to Arbor Street out to 60th Street
- Grover to 72nd Street and 60th Street
- Spring Street to 72nd Street

Parking

Parking on lots surrounding the arena is free, available on a first-come, first-served basis. More than 2,400 stalls are available. Premier parking is available for Suite and Club members.

Spots also will be available on the upper levels of the parking garage at Aksarben Village. The furthest parking space from the arena entrance is about an 8-minute walk, similar to the walk to CenturyLink Center from Lot D there.

Watching it again

The main arena features a massive Panasonic scoreboard and a 360-degree ribbon board for score updates, messaging and more.

Have a Seat

The arena features 7,500 fixed seats, encompassing 17 premium suites, 750 premium club seats and a private club area. The first seat — installed April 20 — is located fourth row, fourth seat in to commemorate the Maverick hockey team's 2015 trip to the Frozen Four.

Ice, Ice Baby

Each sheet of ice in the arena is NHL-sized (200 x 85 feet). UNO guarantees at least 33 percent community ice youth and adult skating usage on the second sheet. The community ice usage will be made available seven days a week during normal hours of operation.

Student Spirit

UNO students will be able to enjoy the big game for free. Approximately 750 student tickets will be made available for each game. A special student section will provide excellent views of the home ice/home court.

What's in a name?

Baxter Auto is the naming rights partner of the new arena. The company has extensive ties with the university and is owned by the family of UNO graduate Tal Anderson.

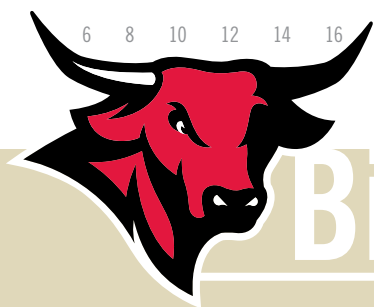
The Price Tag

The estimated cost of the arena is \$81.6 million, which does not include the \$6.3 million provided from the City of Omaha Fund that largely consists of infrastructure and road adjustments around the space where the arena is located. The arena was paid for through a mix of funding:

- \$39 million in private donations
- \$39 million in bonds from the University of Nebraska
- \$3.6 million in university funds

UNO will cover the annual costs of paying off the bonds through ticket sales, concessions and premium seating options.





Bits of the Bull

There's a Buzz in the Air

as UNO heads into the 2015-16 winter sports season. The hockey program looks to return to the Frozen Four, while men's and women's basketball along with track & field and swimming and diving finally are eligible for NCAA Division I postseason competition after completing reclassification.

The UNO hockey, volleyball and men's and women's basketball teams will have a new place to call their own as their new on-campus home, Baxter Arena, officially opens in October.

Following is a preview of the Maverick teams taking the court, ice, pool and track this winter.

Hockey

The 2015-16 season is one of two "firsts" for the UNO hockey team. It will be its first season in Baxter Arena, the on-campus home they have waited 18 years to christen. To say that opening night in a new fan-friendly building is highly anticipated would be a considerable understatement.



Fans rightly get excited when their team is coming off its first Frozen Four berth in school history. And therein is the second of those "firsts" as this is the first time UNO has come into a season after competing in college hockey's premier event.

The Mavericks would seem to be ready for the increased scrutiny and competition from teams on their schedule. UNO returns a solid core of players from 2014-15, including its top 10 scorers. Of that group, only one is a senior — defenseman Brian Cooper. In fact, the Mavericks have just three seniors on their roster of 26 players, making them a young team yet again.

"While we're happy with what we accomplished last year, going to the Frozen Four with such a young team, our players now have to be ready to be that team with the target on its back," says Dean Blais, who enters his seventh season as the Mavericks' head coach. "We won't be taken lightly, even with 10 freshmen on our roster."

"But we're going into a new home this year, and Baxter Arena should give us a real home-ice advantage. It's a chance for our players and fans to create an atmosphere that's very tough on visiting teams."

The offense will be guided by a group of juniors and sophomores who were a big reason why the Mavericks were so successful last season. Juniors Jake Guentzel and Austin Ortega are a 1-2 punch of slick playmaking and sharpshooting. Guentzel led the Mavericks with 39 points, including a team-best 25 assists, while Ortega had a team-best 20 goals, including an NCAA record 11 game winners.

Sophomores Jake Randolph and Tyler Vesel are an equally dynamic duo that combined for almost 50 points last season while finishing third and fourth in scoring, respectively. Junior Justin Parizek had a breakout season last year with 13 goals and 21 points, tying him with sophomore Avery Peterson, who also earned 21 points on 11 goals, best among the newcomers.

The defensive corps will be anchored by Cooper, named to the NCAA Midwest Regional All-Tournament Team, and junior Ian Brady, UNO's top-scoring defensemen last season with 21

points. In addition, sophomores Luc Snuggerud and Joel Messner will be looked upon to play even bigger roles after sturdy freshman seasons. Snuggerud and Cooper tied for eighth in team scoring with 16 points each while Messner was a reliable defensive presence, finishing third on the team in blocked shots.

Junior Kirk Thompson gets an opportunity to be the Mavericks' top netminder following the graduation of Ryan Massa. Thompson has won five games in each of his two seasons as Massa's understudy and last year posted career bests for goals against average and save percentage while also earning his first career shutout.

UNO welcomes yet another large freshman class with 10 newcomers vying for playing time this season. Fredrik Olofsson and Steven Spinner could have an immediate impact. Both are NHL draft picks, two of a school-record nine this season. Olofsson had 27 goals and 60 points while playing for Chicago in the United States Hockey League last season while Spinner had 22 goals and 42 points while playing for the Omaha Lancers.

Also new to the Mavericks this season will be Ryan Galt, an Omaha native who is playing in his hometown for the first time in five years after stints with USHL teams in Des Moines and Bloomington, Ill. His fellow freshman, Jalen Schulz, has a relative who is familiar to UNO fans — former Mav Josh Archibald, who was a big reason why Schulz chose to play in Omaha.

While all eyes are on opening night at Baxter Arena against Air Force Oct. 23, the Mavericks will be squarely focused on their first two series, non-conference road trips to Minnesota State and Vermont. Minnesota State spent much of last season as the No. 1 team in the country while Vermont earned 25 wins during another rugged season in Hockey East. The Mavericks also have non-conference series at home against Ohio State and fledgling Arizona State, which is making the transition from club hockey in 2015-16.

Last season, the Mavericks were one of six NCHC teams to make the NCAA Playoffs and one of two to advance to the Frozen Four in Boston. The



competition figures to be no easier this year as the Mavericks look to finish in the top half of the conference for the third straight year and earn another trip to the NCAA Playoffs.

Men's Basketball

The UNO men's basketball team's preparations for the 2015-16 season began a bit earlier than usual this year as the Mavericks embarked on an 11-day tour of Italy in mid-August. The overseas excursion afforded the team 10 summer practices before departure and allowed them to play four games against foreign competition.

UNO's training trip included stays in three cities — Milan, Florence and Rome. On the competitive side, the Mavericks went 4-0 with wins over All Star Varese (84-43), Stellazzurra (75-39), Isernia (107-31) and Luiss University (81-41). Additionally, the group made sightseeing stops with a private boat tour of Lake Como and visits to the Duomo, the Accademia Museum, the Spanish Steps, Trevi Fountain, the Colosseum, the Roman Forum and the Vatican. Free time allowed for shopping, dining and other sightseeing.

"Our tour of Italy was the opportunity of a lifetime for both our players and staff," 11th-year head coach Derrin Hansen says. "We were able to maximize our schedule to play as many games and see and do as much as possible. It was a unique experience both athletically and culturally for our players. Not only did it create lifelong memories, it brought our team together and helped them build a camaraderie well before our first game of the year."

Now looking ahead to the upcoming season, UNO returns nine letterwinners from its 2014-15 squad, including three starters: senior guards Devin Patterson and Marcus Tyus and sophomore forward Tre'Shawn Thurman. UNO's two departed seniors, C.J. Carter and Mike Rostampour, were last year's leading scorer

and rebounder, respectively.

For its depth, UNO has returners Jake White, Tim Smallwood, Randy Reed II, Tyler Erickson, Devin Newsome and Daniel Meyer, all of whom saw significant minutes off the bench last year. White averaged 20.4 minutes, the most of any non-starter.

The Mavericks also added six newcomers to the roster for 2015-16: true freshmen J.T. Gibson, Zach Jackson, Zach Pirog and Ben Kositzke, as well as transfers Tra-Deon Hollins and Mitchell Hahn.

UNO's schedule comprises 30 games, with the Mavericks playing in 13 states against schools from 10 other Division I conferences. The slate includes premier road games at Colorado, Minnesota and Missouri, as well as a trip to Las Vegas as part of the Global Sports Classic tournament. The home portion of the schedule has 13 contests at Baxter Arena.

"Baxter Arena will be a tremendous place to call home, where our students and fans can enjoy an incredible game-day atmosphere right on campus," Hansen says. "It's already made a huge difference for our program before we've even played a game. Recruits are impressed by the facility, it has excitement among our fan base at an all-time high, and our team can't wait to play its first game there."

The year also marks Omaha's first with full eligibility for Summit League and NCAA postseason play. The Summit League Tournament, which builds its field from the top eight teams in the conference standings, is set for March 5-8 at the Denny Sanford PREMIER Center in Sioux Falls, S.D., just hours from Omaha.

The Mavericks make their debut with a three-game homestand at Baxter Arena, hosting UC Santa Barbara (Nov. 13), St. Mary's of Minnesota (Nov. 15) and UMKC (Nov. 17).



Women's Basketball

Entering its fourth year of Summit League play, the Omaha women's basketball team looks to continue its climb up the league standings. Last year, the Mavericks finished 10-18 overall with five league wins.

"We are thrilled to be stepping into a new era of women's basketball with the unveiling of Baxter Arena against a competitive schedule," says third-year head coach Brittany Lange. "This year's schedule will challenge our young group and prepare us for Summit League play."

Lange will have almost an entirely new roster in 2015-16. All-Summit League forward Mikaela

Shaw returns for her junior season after averaging a team-leading 15.4 points and 8.7 rebounds, plus 1.6 assists and 1.0 steals per game in 2014-15. Shaw finished last season third in the Summit League in rebounding and fifth in scoring. Also returning is sophomore sharpshooter Remy Davenport. Davenport averaged 9.2 points and 2.8 rebounds last season.

Other returners for the Mavericks are senior guard Bobbi Beckwith, sophomore post Vanessa Barajas, and redshirt sophomore Marissa Preston. Beckwith appeared in 18 games last season with four starts after sitting out the first semester due to transfer rules. Barajas appeared in 22 games with seven starts. (1.5 ppg, 1.3 rbg). Preston, a transfer from Wichita State, is ready to vie for time on court this season.

The Mavericks add 10 new players this season, including four transfers whom they will lean on for their experience. Transfers Michaela Dapprich and Moriah Dapprich from Wichita State along with transfer Courtney Vaccher from Texas Tech will sit out this season per NCAA transfer rules, but the trio will be relied on for their past playing experience.



Bits of Bull *Continued*

Among the new faces are forward Jay Bridgeman from Omaha and a pair of McDonald's All-American nominees, post Caroline Hogue and guard Amber Vidal. Bridgeman led Omaha Westside to the Nebraska Class A state championship and was named captain of the all-state tournament team. Hogue, a Little Rock, Ark., native, earned all-state and first team all-conference honors last season and finished her prep career with 933 total blocked shots, which ranks second all-time nationally. Vidal, from San Antonio, Texas, averaged 17.9 points and earned all-state honors as a senior.

Last season, the Mavs finished second in the league in field goal percentage allowed (37.6 percent), 3-point field goal percentage allowed (30.6 percent) and blocked shots (142).

The Mavericks will play 28 regular-season games, including 15 at their new home, Baxter Arena. The slate includes five opponents that participated in 2015 postseason action and a trip to the Texas-San Antonio tournament in November. Omaha opens the regular season hosting Central Florida on Saturday, Nov. 14.

Track & Field

The Mavericks approach the indoor track & field season knowing that they'll be strong in the jumping events. Sophomore Stephanie Ahrens set the school high jump record as a freshman and was named all-league for both the indoor and outdoor seasons. She and junior Taryn Derickson regularly placed in the event last year, and hopes are high for their continued improvement this winter.

"This season, we think we can continue to score points in the field events with help from



Stephanie and Taryn in the high jump along with Noni Henderson in the horizontal jumps," says Chris Richardson, the Mavericks' head coach. "On the track, we'll look for Maddie Buller to continue her success from her freshman year in the sprints and hurdles.

"Among the newcomers, freshman Mackenzie Zach in the sprints and Lauren Houston in the distance events should have an immediate impact after stellar Nebraska prep careers."

The Mavericks will be a young group in 2015-16. In addition to Zach and Houston, eight other student-athletes will compete for UNO as freshmen and junior My'Angel Davis joins the team as a junior college transfer. The Mavericks have 10 more sophomores as well, putting the focus for Richardson and his staff squarely on improving their depth of scoring in all events. Among those who should continue to improve include Alyssa Thavenet (short distances), Nicole Liske (sprints) and Amanda Conlin (throws).

The Summit League indoor season culminates with the championship in Fort Wayne, Ind., Feb. 26-27. Last season, UNO was fifth in the indoor championship. From there, those Mavericks who qualify will be the first to participate in NCAA Championship competition as Division I athletes.

Swimming & Diving



The UNO swimming & diving team is another Maverick program poised for a breakout season in 2015-16, its first with full Summit League and NCAA postseason championship eligibility. Head coach Todd Samland, the only coach in program history, enters his 19th year at the helm and is primed to lead UNO to its first postseason appearance since 2010-11.

Twenty-nine Mavericks return from the 2014-15 squad, led by five student-athletes who earned All-Summit honors a year ago: seniors Natalie Renshaw (50 free, 400 free relay, 800 free relay), Miranda Knipfer (1-meter diving, 3-meter diving) and Hannah Johnson (400 free relay), junior Morgan Stepp (200 fly, 800 free relay) and sophomore Cassie Jahn (400 free relay, 800 free relay). Renshaw, the team's appointed captain, was also an Academic All-Summit selection.



"We foresee Natalie having a great year," Samland says. "She's our captain, and she works with the rest of the senior class as a whole to lead our team. Our seniors as a group have put in a lot of work these last few years, and they want to lead us to more success in 2015-16."

Omaha's schedule is highlighted by meets with Iowa State and Nebraska and a trip to the Kansas Classic, a perennially challenging meet in Topeka.

"Our schedule pits us against a couple of power teams," Samland says. "In previous years, we've put a lot of emphasis on the conference meet at the end of the season. This year, we're changing that focus and emphasizing that every meet is important. We're looking forward to seeing how our team responds to the challenges our schedule presents every week."

With full postseason eligibility now on the table, Samland pointed out the new opportunities available to his student-athletes, especially come March and beyond.

"We have some swimmers who are starting to dream about qualifying for the NCAA Championships and even Olympic Trials, which will be held right here in Omaha next summer," Samland says. "That's a big step for us, and it's one that we're excited to see unfold in the coming months."

— By Dave Ahlers,
Bonnie Ryan and Shad Beam —
Omaha Athletics Communications

Trio to Enter Athletics Hall of Fame

ON NOV. 4, A TRIO of former athletes from UNO will be remembered for their playing days when they are inducted as the newest members of the UNO Athletics Hall of Fame, a joint venture of the UNO Alumni Association and UNO Athletics.

Entering the Hall of Fame as the Class of 2015 will be wrestler J.D. Naig, track & field athlete Pinar Saka and softball player Jenni Upenieks.

Their inductions will be part of the second annual UNO Alumni Night of Honor hosted by the Alumni Association at the Thompson Center (see more on page 9).

The Alumni Association began the Hall of Fame in 1974 with the induction of Marlin Briscoe, Bill Englehardt, Leo Pearey and Roger Sayers. With the induction of Naig, Saka and Upenieks it will include 111 members.

Naig was a three-time national champion and finished his career at UNO in 2007 with a 140-26 career record, the sixth-most wins in school history. Wrestling at 165 and 174 pounds during his career, the native of Emmetsburg, Iowa, won national titles in 2005, 2006 and 2007. He had finished third as a freshman, making him one of just 11 Mavericks ever to be named a four-time All-American.

Naig's 43 career falls are tied for seventh in school history, and he also was a two-time Academic All-American. In 2007, Naig was named Outstanding Wrestler of the NCAA Division II National Tournament with a final record of 42-7.

Saka was an eight-time All-American and was twice a national champion while competing for the UNO track & field team from 2006 to 2010. The native of Istanbul, Turkey, won the 400 meters and was a member of the winning 4 x 400 meter relay at the 2009 NCAA Indoor Championship. That same year she helped the Mavericks win the MIAA Indoor Championship and was the MVP of the championship while winning the 400 and 4 x 400 relay. For her efforts, she was both the South Central Region Track Athlete of the Year and the USTFCCCA Division II Track Athlete of the Year (both indoors).

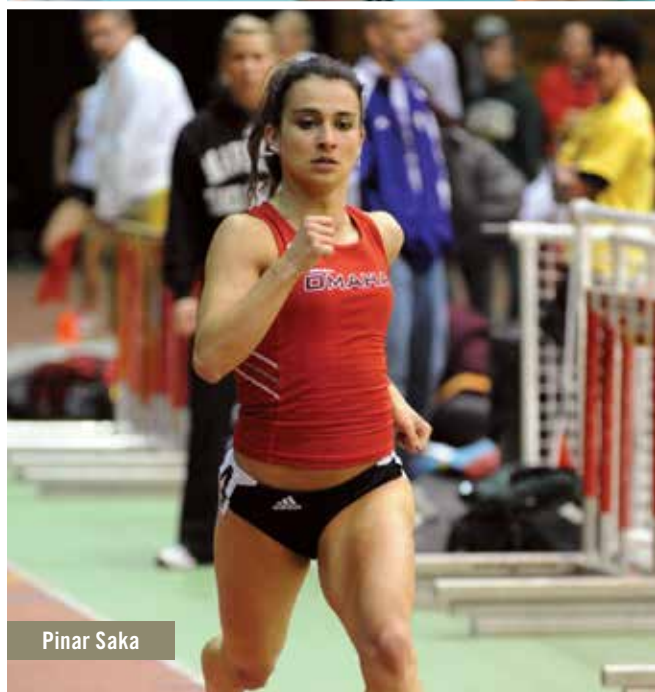
In all, Saka was a six-time conference champion. She owns four school records and was part of four school-record relay teams. She later became the first Turkish woman to compete in the Olympics, competing in the 400 meters in London.

Upenieks played for the UNO softball team from 1994 to 1997, finishing high on several career batting charts. She was a four-time all-North Central Conference player as a center fielder and was a second-team All-American in 1996 and a first-team pick in 1997. The native of Urbandale, Iowa, stands fifth in career RBI with 143 and third in runs scored with 182.

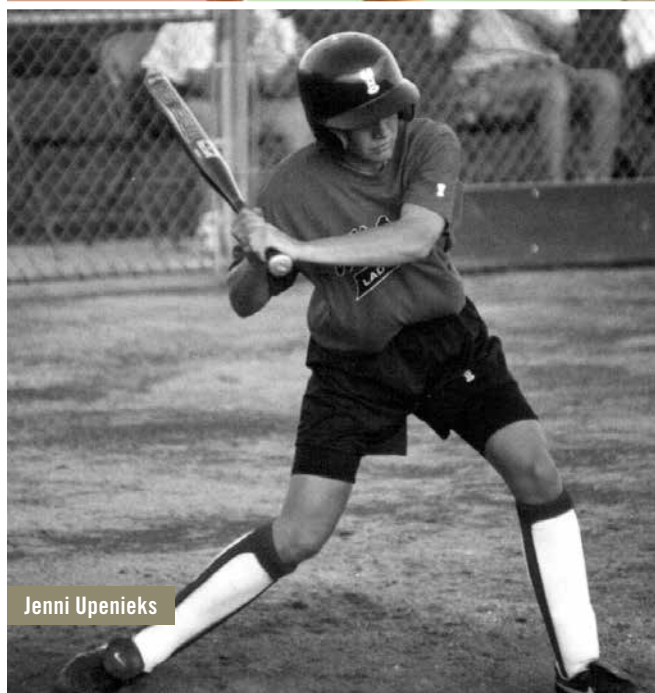
Upenieks led the Mavericks to four straight national tournament appearances and 194 victories during her career. UNO finished third twice, fifth and second during that period.



J.D. Naig



Pinar Saka



Jenni Upenieks

T H E



F A C T O R

Too Few Women Studying IT Computes to More Challenges for Businesses to Fill Jobs

By Susan Houston Klaus

For every woman working toward an IT degree today, there's a universal truth: These students are in the minority — among only a handful of other females in their courses and on the job.

While it's something that those who have chosen this career path have learned to take in stride, it's also something they're ready to see change.

Demand far outweighs supply

At UNO, only about 13 percent of IT undergraduates are female.

It's a gender imbalance reflected in the U.S. workplace. According to a recent report by the American Association of University Women, women comprise only 26 percent of those in IT positions.

Even in technology hot spots — Google, Apple, Twitter, Facebook, etc. — the needle barely budes, to an average of 29 percent.

In fact, the number of women choosing IT careers — and staying in them — has dropped dramatically in the past three decades.

Contrast that with a growing need for workers: In just five years, the U.S. Bureau of Labor Statistics estimates, there will be 4.2 million jobs in computing and information technology.

According to a 2014 survey from the Greater Omaha Chamber of Commerce, nearly 1,500 IT professionals will be hired in Omaha during the next two years.

Why can't the field attract and keep more women?

Several factors are at play, says Dr. Deepak Khazanchi, associate dean for academic affairs in the College of IS&T.

Though girls and boys like science equally in elementary school and score equally on the AP computer science exam, societal stereotypes make a lasting impression. Girls start

A Career That Pays

Not only is there a plethora of positions waiting for recent IT grads — there are well-paying jobs, too. Upon graduation, IS&T graduates often start at \$50,000 a year, nearly \$20,000 more than the average UNO student.

But there's even more to the picture, according to data from the Greater Omaha Chamber of Commerce provided by Chmura Economics.

Within the nine-county Omaha CSA region, the computer and electronics industry has an average annual salary of \$70,800. In a related cluster, computer and mathematical occupations, the average annual salary is \$73,000. That group also has the highest concentration of employment in the region, compared to the national data.

That kind of earning potential can be life-changing, and not just for traditional students,

says Shonna Dorsey (*pictured*), an IS&T alum (MS, 2010; BS 2003) and UNO IS&T Alumni Advisory Group board chair. Dorsey is the managing director and a co-founder of Interface Web School, an Omaha-based Web developer training school. “I’ve worked with women who have been stay-at-home moms or in lower-wage positions who are thinking about transitioning to a living wage,” she says. “Through the training UNO and Interface offer, some have made complete lifestyle transformations and have found the empowerment that comes from learning skills like these.”



questioning their abilities and forming inaccurate depictions of a career in IT — “it’s boring,” “it’s only for people who love math,” “it’s just about writing code.”

“There’s either a conscious or accidental push from peers, parents and educators that may steer many girls from entering IT,” Kazhanchi says. Instead, they’re guided toward what others may view as more female-friendly fields.

The cycle of fewer and fewer women in IT also has had an impact. Many female students don’t have mentors and role models they can look to for guidance and to imagine themselves taking a similar track.

Those who do graduate with an IT degree aren’t guaranteed an easy go of it.

“The thing that’s simple and eye-opening to me when you’re a woman — or any minority in a room — is you’re less likely to raise your hand, less likely to get noticed and less likely to get pulled into engagement and projects,” says Sue Thaden, president of CRI, an Omaha IT solutions firm.

“Without engagement, there’s a really fast disconnect. The quiet woman in a group of 20

might not get picked for a project and so she’s not getting challenged.”

Business leaders and educators alike say preparing women to take their place at the IT table is crucial to the success of companies.

“More diverse teams are needed to help drive innovation and solve problems,” says Khazanchi. “It’s been proven time and time again that diverse teams produce better results. We’re able to solve more complex problems when people on the team bring their unique perspectives to the table.”

A report by the National Center for Women in Technology cited statistics that bear that out. A study of 1,400 team members from 100 teams at 21 companies in 17 countries found that gender-balanced teams were the most likely to experiment, be creative, share knowledge, and fulfill tasks. What’s more, the research also found that the most confident teams had a slight majority of women.

Starting Young

Building confidence among team members in the workplace means first building it when students are young. That means identifying strengths and areas of interest then encouraging their development.

Should elementary and high school educators be doing more to help students connect with career areas based on their skill sets instead of job titles?

“Absolutely, yes,” Thaden says. “I would think as a teacher it would be an easier dot to connect. That helps break it down into, ‘Here’s a creative-thinking kid who thinks outside the box — she could be a user-experience designer.’ Or, ‘Here’s someone who likes to solve problems — there’s a software designer.’

“It’s about recognizing a student’s innate traits and skills.”

Dr. Angie Hodge, assistant professor of mathematics, agrees. Hodge holds the Dr. George Haddix Chair of Mathematics Education at UNO, created to react to the need to produce enough homegrown STEM majors to fill U.S. jobs.

"Anything we can do to help build female confidence in STEM fields is important," Hodge says. "Young women need teachers who will celebrate their successes and help them identify their skill sets."

She urges students to seek out educators and other students who support their interests.

"Find out which teachers support you the best and who will connect with you. Make an effort to work with your peers. Seek out people who are encouraging."

UNO and the College of IS&T are tackling these challenges head-on.

Recently, UNO was among 20 universities chosen to participate in the Pacesetters program of the National Center for Women & Information Technology.

Two years ago, along with the University of Nebraska Foundation, the College of IS&T established the Women in IT Initiative, part of a community task force designed with a mission of recruiting more women to UNO's program and creating a more diverse pool of talent in Omaha.

Chaired by Thaden, the task force includes a mix of female and male IT leaders from the Omaha business community, as well as Khazanchi, College of IS&T Dean Hesham Ali, and Terry Hanna, NU Foundation director of development.

In just four months, the initiative raised \$250,000 to fund activities designed to introduce young women to IT. By October 2014, another \$150,000 was raised to continue the programs.

Inherent to the initiative's success is that, in addition to building on proven activities that introduce more women and girls to IT, it's also focused on designing new solutions to address the gender gap, Khazanchi says. The task force, with help from many current students, staff and faculty, has developed unique programs focusing on Nebraska and the Midwest.



Dr. Deepak Khazanchi
associate dean for academic
affairs in the College of IS&T.



Sue Thaden
president of CRI



Its list of accomplishments is long:

- Creating CodeCrush, an immersion experience for local middle and high school girls
- Supporting an iSTEM after-school program at Lewis and Clark Middle School, an effort that is expanding with support from the private foundations and local corporations
- Supporting achievement awards for local high school students through the Aspirations in Computing program of the National Center for Women and Information Technology
- Encouraging more IS&T students to attend the Grace Hopper Celebration of Women in Computing networking and mentoring event, as well as more professional conferences
- Supporting the Women in IT mentoring program
- Recruiting more girls and minorities into IS&T programs from area high schools
- Funding private scholarships for women IT students

CodeCrush, designed for 8th and 9th grade girls and teachers, has been a big hit. In its second year, the number of applications to the three-day program rose 50 percent and drew girls and educators from throughout Nebraska and Iowa. An additional, shortened experience was added last summer to accommodate those who couldn't attend in the spring.



HOW TO HELP

Want to help grow the number of women choosing IT education and careers? Here are some ways to get involved



SPREAD THE WORD

Talk to others, including work peers, teachers and parents, about the need to prepare girls and women for careers in IT.

DONATE YOUR TIME

If you're a female in the industry and want to help others on their way up, join the Women in IT Mentoring program. It takes only a few hours in your schedule and can build lasting relationships.

DONATE

To continue to make progress in their immediate and long-term goals, programs like the Women in IT initiative need funding. You can show your support by making a financial contribution.

*At left: Student in the CodeCrush program for middle school girls.
Below: This summer 55 girls attended EUREKA!/STEM camp.*

Attendees learn about and apply skills based on music informatics, computer science, bioinformatics, coding, IT innovation and cybersecurity.

The program includes hands-on educational workshops, campus and cultural activities, visits to local corporate IT departments and panel discussions. Teacher mentors attend parallel sessions on how to incorporate emerging IT topics in their classes.

The Women in IT mentoring program pairs UNO students with IT industry professionals. Each mentor meets with her mentee monthly to share professional wisdom, give insight about how she's become successful, coach the mentee on workplace practices, and introduce her to other IT professionals in their workplace.

Since its inception, the program has more than doubled in size, growing to 33 pairs in the 2014-15 academic year.



EUREKA!/STEM, a four-week program for Omaha-area middle school girls, provides a hands-on experience in science, technology and mathematics. This summer, 55 girls attended the camp, a partnership between UNO and Girls Inc. of Omaha. Guidance and lessons on STEM concepts came from faculty in the UNO College of Education and College of Arts and Sciences.

This year, participants had an opportunity to apply their STEM education at locations such as Adventureland, the Henry Doorly Zoo and Glacier Creek Preserve. They also engaged in unique activities including a high-altitude balloon launch, an aquaponics project, and use the equipment at the UNO Biomechanics Research Building.



From left: College of IS&T students Delaney Lyman, Kat Slump and Emily Pachunka.

Feeling Welcomed

When deciding upon a college to attend a few years ago, Delaney Lyman saw a distinct difference at UNO that put it ahead of other schools.

"No one could hold a candle to how welcoming UNO is to women," Lyman says.

An information assurance major, the sophomore has found many ways to build her skills and get support. In the spring, she attended the 2015 Women in Cybersecurity conference in Atlanta. She calls it "an incredible experience" to meet with other students as well as women who working in the field.

Lyman has been working since January at The Attic, an IS&T student developer group that creates mobile apps and websites. She since has learned five different computing languages and worked on projects for UNMC. She also has become a mentee in the Women in IT mentoring program.

Lyman has plenty of company at UNO. That includes junior IT innovation major Kat Slump.

UNO students pursuing such a degree get a computer science background while also choosing 33 credit hours that support their career goals. Slump says she's been able to take her interest in tech and apply it to other areas — and that's given her a new perspective on her future.

It's been a busy year. She received a scholarship to attend the Grace Hopper Celebration of Women in Computing conference in Phoenix last fall. Slump also was one of 22 women in the U.S. — and the first in Nebraska — selected to participate in Square College Code Camp, a five-day immersion program held in San Francisco.

This summer, she interned at the Omaha IT start-up Flywheel, where she learned a new programming language and created dashboards and other tools.

Fellow student Emily Pachunka has received similar assistance at UNO and now helps others get excited about IT by taking part in outreach programs like CodeCrush. She's also taught mobile app development classes for underprivileged kids.

"I realized how amazing that is," she says. "If someone sits down and takes the time to get them exposed to IT, they can realize this might be something they can do later in life."

As Pachunka works on her senior thesis research project, she's eager to apply what she's learned to a real-world situation, like cancer research or gene therapy research. She says she appreciates the support the college gives students.

"They really have a personal interest in the students. They put all their time and effort into what students need to succeed and into making partnerships with area companies, so we can have the opportunities we need to be successful."

Oculus Rift

State-of-the art display and optics design provides “sensation of presence” — feeling as though you’re actually there — in Virtual Reality scenes.

RETAIL \$350

Sensewear Armband Mini

Counts steps, calories burned, sleep and many other variables. The “gold standard” among accelerometers.

RETAIL \$199

Myo Gesture Control Armband

Can sense electronic impulses in forearm and transmit movement wirelessly to control computers, CEENbots or even a Drone.

RETAIL \$199

Apple Watch

Can monitor and display heart rate, steps taken, the weather, your location on a map, your calendar and more. Oh, yeah, tells the time, too. Can sync with iPhone or Mac.

RETAIL \$299 TO \$13,500

Fitbit Charge HR

Measures calories burned, steps, heart rate, sleep, distance walked.

RETAIL \$149.95

Zephyr BioHarness 3

Wireless Professional Heart Rate & Physiological Monitor with Bluetooth. Collects comprehensive physiological data on an individual participating in physical activity, including heart rate and breathing rate. Has been used at NFL combine.

RETAIL \$549.95

Mood Ring

Popular in the '70s. Purported to tell a person's mood. Uses thermochromic element, such as liquid crystal, that changes colors based on finger temperature.

Smartphone

Usually attached to hand but often seen tucked in waistband of UNO female students on the go. Capable of sending thousands of texts, tweets and Snapchats in mere minutes.

Delsys Trigno EMG System Sensors

Electromyography sensors that record and evaluate electrical activity produced by skeletal muscles. Can be used to detect medical abnormalities, activation level or recruitment order to analyze movement.

COST \$20,000

Pedar System by Novel

Used at Biomechanics Research Building, the pressure distribution measuring system monitors local loads between the foot and the shoe. Single pad contains more than 1,000 sensors.

COST \$35,000

STEM WEAR

More and more technology is being embedded into the clothes on our back...and everywhere else

By Kevin Warneke

Neal Grandgenett admits he once owned a mood ring.

So did his friends, even though the rings — which contained liquid crystals purported to change colors based on the wearer's body temperature — didn't work so well.

Hey, it was the 1970s. Mood rings were a cult craze that disappeared nearly as fast as they came.

But they were Grandgenett's first exposure to "wearable technology," inaccurate as they may have been.

These days, one of Grandgenett's interests is turning grade school children and their instructors onto wearable technology as UNO's Haddix Community Chair of STEM — science, technology, engineering and mathematics — Education.

Wearable technology in the present means devices like Fitbits, which monitor physical activity (or lack of it) and Apple Watches, which have been called the most advanced timepiece ever made. Wearable technology in the near future, according to Grandgenett, will mean much more.

"If you can have a sophisticated watch, you can have a sophisticated hat," he says.

Or ties. Or shoes. The possibilities are many, he says.

Grandgenett talks of circuitry and sensors sewn in garments, perhaps using conductive thread, which could direct the wearer to a restaurant, shopping mall or park.

Grandgenett recently found himself in a quandary entering a pitch-dark restroom — stationed halfway between the door and the light switch. He could feel around for the switch in the dark or, break for the door, open it and spot the light switch before the door closed.

"Had I been wearing a light-sensing vest or other device," he says, "I could have detected that it was dark and light up."

The moment prompts Grandgenett to suggest a similar scenario: A sight-impaired person steers clear of an object in his way not because of a service animal's direction but from a message received from light and sound sensors placed in his clothing.

"Wearable technology may not replace service dogs, but it certainly may supplement them," Grandgenett says.

The Apple Watch has launched high expectations for wearable technology. The weekly business publication the Economist earlier this year reported that consumers are prepared to spend reasonable sums for "wearables."

"But even so," the publication reported, "their interest in buying them is still some way behind the enthusiasm shown by the many hardware companies investing heavily in designing them."

Sportswear companies are competing to develop jerseys, shoes, even bras loaded with sensors and wireless circuitry, the Economist reported. "Firms' ambitions range from the critical to the cuddly."

Turns out UNO is at the forefront of developments to advance wearable technology.

UNO in the mix

At UNO, wearable technology initiatives include Grandgenett's work in the classroom as part of the Wearable Technologies Project (WearTec) with the University of Nebraska-Lincoln and a UNO Center for Biomechanics Research project to help people with chronic obstructive pulmonary disease (COPD).

Grandgenett serves as co-principal investigator with UNL colleagues of the WearTec project, funded by a \$1.5 million National Science Foundation grant. The aim is to help students create their own wearable technologies.

It has UNO graduate Paul Clark, technology specialist for Gretna Public Schools, excited about the coming school year. This year, he's putting the WearTec model into play. He'll start slowly, and see how Gretna's students embrace the concept.

"Sometimes you have to learn to add before you can divide," he says.

In the recent summer training provided to educators, two quilts served as props—one that illuminated the Oregon Trail across Nebraska and another that used LED lights to simulate a campfire. Not exactly wearable, but the technology stitched in the quilts is just the beginning for leading to more sophisticated projects, Clark and Grandgenett say.

The WearTec project targets fourth- to sixth-graders, Grandgenett says, because research indicates that's the time to get them excited about "STEAM" (note the added component, "Art"). Wearable technology gives children an option other than robotics and the competition that tags along. Wearable technology features all the science components and adds textiles and sewing.

"Some of the kids show incredible creativity," Grandgenett says. "It's like a science fair environment. At a science fair, you show off what you did."

The components for student-created wearable technology are inexpensive: microprocessors and sensors, Grandgenett says. "And the costs keep coming down." Students learn to calibrate and program sensors then determine how to integrate them into garments.

The next phase of the WearTec project is to provide educators with the tools they need to introduce wearable technology into their classrooms. The final step will be to allow their students to create their own. Soon, he predicts, their work will evolve from lights and sounds to sensing atmospheric conditions such as wind and humidity.

"I would say the beauty of this project is—the kids will figure it out," Grandgenett says.

Wearing hope

Over in the Biomechanics Research Building researcher Jeanna Yentes and her understudy Will Denton have developed a piece of wearable technology that will help physicians alert patients when their chronic obstructive pulmonary disease (COPD) is about to flare up. The work is funded by the National Institutes of Health.

Development started several years ago when Yentes challenged

Denton to figure out a way to measure respiration and locomotion simultaneously. Yentes, assistant professor in UNO's School of Health, Physical Education and Recreation and director of the Balance and Strength Laboratory, has an interest in how heart rate and breathing synchronize, and how breathing and walking coincide for those with COPD.

People who suffer from COPD, Yentes says, often avoid exercise because they fear a COPD episode.

"It's just not worth it," she says.

With no way to predict when a patient's COPD exacerbates, Yentes turned to Denton, a graduate research assistant, to create a prototype of a wearable monitor to provide a warning. He first delivered a nonworking version made from two pieces of fabric with sensors sewn inside, held together by an Ace bandage. More versions followed, including one that had a sensor attached to the wearer's foot and one to the chest.

"We had to get rid of the ankle piece," Yentes says, "because it looked too much like a home-monitoring bracelet."

Yentes and Denton wondered if their concept had commercial potential. They turned to UNeMed, a University of Nebraska Medical Center unit that provides intellectual property protection and commercialization services for inventions developed there. Now, a Minneapolis-based company is turning the prototype into a commercial model. The computerized sensors from their version have been reduced from the size of several decks of cards to five sticks of chewing gum. The sensor goes under the wearer's shirt. The data collected is encrypted and sent to a cloud-based server.

Someday, if all goes well, Yentes and Denton will test their wearable against the competition as part of a clinical trial. "We'll see how we do," she says.

More importantly, Denton says, their monitor could save, or at least improve, someone's life.

"We're hoping," Denton says.



Jeanna Yentes



Will Denton

STEM-WEAR MODEL

STEM comes easy to UNO senior Natalie Renshaw, a biology major who plans to continue to medical school. SWIM comes, easy, too — captain of the Maverick Swimming & Diving Team, the senior from Millard North was All-Summit League last year in three events. See more on her and her Maverick teammates on Page 24.



MEASURING FIT BIT BY BIT

By Kevin Warneke



Here's how various accelerometers fared when compared to the SenseWear Armband Mini, the "gold standard," in testing performed by Skyler Brooke. Rankings are from most to least favorable. Brooke says it's also important to consider design/style, battery life, cost and comfort.

1. Polar Loop
2. Jawbone Up
3. Fitbit Flex
4. Garmin Vivofit
5. Basis Peak*
6. Fitbit Charge HR*
7. Misfit Shine
8. Basis B
9. Nike Fuelband SE

But why not just buy the accurate SenseWear? "It's bulky and lacks the 'Look what I have' factor," says the certified exercise physiologist.

**Basis Peak and Fitbit Charge HR were tested with only 6 and 17 subjects, respectively. All other monitors had at least 30 subjects.*

Skyler Brooke believes accelerometers should be held to high standards.

Accelerometers—Fitbits to the commercial crowd—usually are worn on a wrist and monitor activity.

Brooke set out to find whether they are as accurate as they proclaim. He put nine brands—including two versions of Fitbits—to the test against the SenseWear Armband Mini, which he calls the "gold standard" of accelerometers.

Assistant director for strength and fitness at UNO's Wellness Center, Brooke asked 95 people to wear three different accelerometers—chosen randomly—for 24-hour stretches each. Brooke figured the span would compensate for times in a person's day when accelerometers might not register the full impact of activity.

Doing so is difficult.

"Monitors can't tell if I'm lifting 30 pounds or 500," Brooke says. "They can't tell if I'm running up a hill with a full backpack or downhill with nothing in my backpack."

All nine underperformed vs. the SenseWear for counting calories burned. The best of the bunch, Brooke says, was the Polar Loop, which finished 13 percent mean absolute percent error. The Garmin VivoFit was last at 24.5 percent.

Brooke explains those results in terms of diet and exercise: A person who actually burned 3,000 calories while wearing a Polar Loop would see only about 2,700 calories burned.

Brooke personally has worn several different brands of accelerometers (his best day is 4,800 calories burned and 34,000 steps).

"I love the fact that they track everyday movement," he says.

Despite some underperformance issues, Brooke says he sees great potential as activity trackers evolve. Most single-sensor accelerometers have tunnel focus—steps, calories burned. Someday, he says, measuring heart rate and altitude will be standard features.

"That way, my monitor will know I'm climbing steps or the intensity of my activity has changed."

The next step could be to monitor inactivity.

"What if my monitor vibrates when I've been inactive too long? That could send me a message to get off the couch," Brooke says.



The Science of Sweat

HIIT workouts
show benefits
to intense,
but shorter,
exercise routines

By Greg Kozol

What if workouts
were measured
in minutes rather
than hours?

What if getting into shape could be done in short bursts of activity and required only enough equipment to fit into a personal closet—or none at all?

Science is telling us this is the way to sweat.

The approach is known as HIIT—high-intensity interval training—and it's gaining popularity at UNO and elsewhere around the country. Originally geared toward athletes and serious exercise enthusiasts, the workout method gets results for everyday Joes, too.

"It's basically a period of intense exercise followed by a period of low intensity," says Skyler Brooke, a certified exercise physiologist and UNO's assistant director for strength and fitness. "Any sport that is played is done in that fashion."



Skyler Brooke

Rather than jogging methodically for 30 minutes or more, a HIIT workout might feature a 20-second all-out sprint followed by a 10-second rest, repeating that pattern eight times or more. Studies show HIIT exercises can build speed, endurance and strength.

And though workouts are shorter, the harder work burns as many calories, or more, than slower-paced, less intense workouts.

"People think, 'I'm supposed to do an hour of strength training?' Even 20 minutes of a vigorous workout will give you as much benefit as a low and slow workout," says Missy Henry, an instructor in UNO's School of Health, Physical Education and Recreation.

In addition, HIIT workouts are found to enhance the process called post-exercise oxygen consumption. In the two-hour period when the body returns to its pre-exercise status, someone who finishes a HIIT workout is able to burn 15 percent more calories than they do during normal periods of rest.

That's while doing nothing. "Your body is just working so hard," Brooke says.

HIIT, adds Henry, provides "more bang for your buck."

"With this more vigorous exercise, you don't have to do it as long," Henry says.



HIIT cycle could be repeated eight times with sprints, then squats, lunges or other exercises.

Begin with a baseline

The key is to find your personal baseline exercise level. A heart rate monitor is helpful, Brooke says, because high-intensity exercise requires a person to exercise at 80 to 95 percent of their estimated maximum heart rate. A good rule of thumb is that someone would have a hard time completing a sentence at this level of exertion. During the cool-down period, it would be easier to carry on a conversation.

A HIIT workout can last 25 to 30 minutes. After about five minutes of stretching and cardio warm-ups, a person could sprint as fast as possible for 20 seconds, followed by a 10-second cool down. This cycle could be repeated eight times with sprints, then squats, lunges or other exercises until the workout is complete.

"Afterward you sweat for an hour," Brooke says.

Brooke says HIIT training is gaining in popularity, especially among the college-age population in UNO's campus recreation programs and School of Health, Physical Education and Recreation.

Jenni Rock has noticed the trend. The assistant budget director at UNO is an American College of Sports Medicine-certified instructor who leads an exercise boot camp twice a week at the university. Part of that exercise program involves HIIT elements. People embrace it, she says, because even a beginner can do something hard for a short period then build on it.

"We are a results-based society," Rock says. "They feel pretty darned good. They get a sense of victory."

Rock, who conducts her boot camps over the lunch period, loves the way HIIT training incorporates an effective workout into a condensed period.

"These workouts don't take a lot of time to do, if you're constantly in a time crunch," she says.

Unlike CrossFit, which also is growing in popularity, HIIT workouts don't require much in the way of equipment. Many of the exercises involve highly intense versions of old favorites like pushups, squats, or even jumping rope.

"You can do it right in your living room," Brooke says.

Henry believes it's a good idea to do interval training in groups, because the advantages are lost if you coast through the workout. You have to really push yourself.

"The group atmosphere pushes people to that maximum level and holds people accountable," she says.

Both Brooke and Rock advise beginners to start with what's known as a Tabata workout. It's based on a 2-to-1 ratio that gives athletes higher endurance with lower injury rates. Developed in Japan, Tabata centers on intense workouts sometimes referred to as the "longest four minutes of your life."

Brooke suggests this: Five minutes of stretching followed by a light workout, maybe on an elliptical machine. Then, as many squats as possible for 20 seconds followed by 10 seconds of rest. Then, 20 seconds of pushups followed by 10 seconds of rest. You

would do eight rounds of each, for four minutes of work on a particular exercise.

For Rock, a typical workout would have someone do eight 20-second cycles of jumping jacks, pushups, squat jumps and maybe burpees (aka, up-and-downs). A burpee involves jumping into the air, falling down to a pushup position and then jumping back up. Each exercise is followed by 10 seconds of low activity.

Henry suggests six rounds of 20 pushups, 20 air sprints, 20 ring rows (a horizontal version of a pull-up) and a 200-meter run, all done as quickly as possible.

People forget what vigorous intensity is.

Brooke says he prefers groupings of sprints, pushups and squats in his workouts.

"You're pushing yourself to near 100-percent maximum effort," Brooke says. "It's hard. The drawback is it's uncomfortable doing anything at a maximum level."

Henry says it's common for her to ask HIIT participants, after a short but intense exercise session, if they want to do more.

"They'll say, 'no,' she says. "They'll be dead. People are surprised what kind of workout they can get in such a short period."

Benefits beyond the gym

The benefits extend beyond serious fitness enthusiasts. Brooke says research is showing that HIIT techniques are useful to patients with chronic health conditions who have difficulty with any kind of physical activity.

Many people with peripheral artery disease can't exercise for a sustained time without experiencing leg pain. But high-intensity walking for as little as two minutes has proven effective in allowing such patients to take the first steps toward becoming physically active, Brooke says.

Other research has shown benefits of high-intensity exercise for people with chronic conditions such as heart disease and diabetes.

Some interval workouts use 1-to-1 ratios, with five minutes of steady running followed by five minutes of walking, for those who have difficulty with intense physical activities.

"The great thing is you can gear it toward whatever fitness level you're at," Brooke says. "It's whatever is challenging to you."

Rock has seen exercise trends come and go. She believes high-intensity training is not a fad because it gets results. She also has seen how the short duration and mix of different activities prevent the boredom that sinks many a well-intentioned exercise resolution.

"People are always looking for the latest, greatest thing," she says. "They like the variety and they are seeing results. They keep coming."



SWEATING the SCIENCE

Missy Henry points out that the science of a HIIT workout is incorporated into classes in the School of Health, Physical Education and Recreation.


But that's not the only science of sweat taking place in the College of Education school.

Researchers there, for instance, are studying how to treat sports-related concussions and how soon an athlete should return to competition after a serious head injury.

At UNO's Exercise Physiology Laboratory and Fitness Center, researchers study how extreme temperatures affect fitness training and how much oxygen an athlete is able to produce during heavy exercise.

Some of the findings go far beyond athletic performance. A new way of measuring an amputee's gait could lead to the development of more effective prosthetic limbs, improving the quality of life for veterans and accident victims.

The research into extreme temperatures also carries implications for how military personnel respond in hot and cold environments.



Dr. Kirk Hutton, a UNO graduate, often turns to country when jamming in the OR.

Photo: Eric Francis.

Sound Health

UNO researchers
explore the ways
music helps us heal

By Rick Davis

Doctor, doctor, give me the news ...
music can help chase away your blues.

And soothe the nerves of patients, sharpen
the focus of surgeons and improve movement
in the elderly or those suffering from
neuromuscular disorders.

UNO researchers in several disciplines are
exploring the connection between what we
hear and how we heal.

That includes Mary Perkinson, an assistant professor of music at UNO
and a concert violinist who has performed with the Omaha and Madison,
Wis., symphonies and toured internationally with the Broadway musical
The King and I. Perkinson developed the Sound Health program while a
graduate student at the University of Wisconsin-Madison. The award-
winning program has musicians from UW performing in public spaces at
the University of Wisconsin-Madison Hospital.

"Patients said that it made them feel less anxious during their wait time
to see the doctor," Perkinson says.

She tells the story of one patient in her 60s who normally took anti-
anxiety medication before visits to her ear, nose and throat doctor. The
music had a dramatic effect on her stress levels. "She told me she didn't
need to take it (the medication) because she felt so calm from
the music."



Sound Health's Joye Trimmell and Katelyn Kukoly playing at Bergan Mercy Medical Center.

“Sound Health’s mission to enrich the hospital environment for patients, community and staff through live music is a perfect complement to our hospital’s healing ministry.”

Perkinson initiated the program at UW in 2010 after visiting her father-in-law at the Cleveland Clinic as he awaited surgery. “I had not spent much time at hospitals, and it was very stressful,” she recalls.

Leaving the room to get something to eat, she heard the relaxing sounds of a harpist playing in the hospital’s atrium. An audience of doctors, hospital staff and patients, joined by family and friends, had gathered to listen. “I felt really inspired and moved by that experience, and I wanted to be on the giving end of something like that.”

Perkinson joined the UNO faculty in the fall of 2014 and started a similar project in Omaha this past spring — launching a pilot program at CHI Health Bergan Mercy Medical Center.

The result was four performances at the hospital — with presentations ranging from percussion and string ensembles to piano music — that involved 21 UNO students.

“The students were really excited about it,” Perkinson says. “It gives them a chance to perform in a welcoming environment and to contribute to the community.”

Katelyn Kukoly of Fremont, Neb., who is studying violin performance and music education at UNO, enjoyed the unique setting.

“It was cool being in a hospital, somewhere completely different,” Kukoly says. “Everyone seemed to really appreciate the music.”

Kukoly, who also plays violin in a local rock band, performed in the lobby of the hospital with two other UNO music students for about an hour. She played duets with a cellist, while the third student also played the violin.

The hospital’s staff was grateful to have the students perform.

“Sound Health’s mission to enrich the hospital environment for patients, community and staff through live music is a perfect complement to our hospital’s healing ministry,” says Cheryl Morehouse, volunteer and guest services manager and healing arts ministry coordinator at Bergan. “As a musician myself [flute and piano], I also understand the value of live performances being extended to participating students. It’s a win-win situation.”



Morehouse says feedback comments included “That just made my day!” and “Brightened my whole week!” This fall, Perkinson plans to partner again with CHI Health Bergan Mercy Medical Center and add Children’s Hospital and Medical Center.

UNO music majors, from left, Jeremy Ahlstrom, Gabe Cahill and Kevin Krause perform at Bergan Mercy Medical Center.

Every Step You Take, Every Move you Make

Don McLean dug those rhythm and blues in American Pie, but the Go-Go’s more accurately sum up UNO professor Nick Stergiou’s research on music’s influence on human gait with the group’s 1982 hit We Got the Beat.

Stergiou, director of the Biomechanics Research Building at UNO, has been studying the influence of auditory signals on human gait. This research holds potential for improving the gait of patients suffering from neuromuscular disorders and for older individuals who are experiencing deteriorating gait.

Stergiou and his team conducted trials in which subjects were fitted with headphones and listened to Beethoven’s Fur Elise while walking around an indoor track at UNO. The subjects wore an electronic device to measure their strides.

Researchers then manipulated the beat of the music — from random (white noise) to predictable (brown noise) to somewhere in between (pink noise).

What did they find?

“We believe that not all auditory signals are created equal,” Stergiou says. He references a theory of aesthetic value developed by the late American mathematician George David Birkhoff that basically states that a work of art is pleasing if it is neither too regular and predictable nor packs too many surprises.

The same is true for healthy human gait, Stergiou says.

“When you walk, every step that you make is not exactly the same as the previous one,” he says. “If every step that you take is extremely repetitious, that is not good for you. You are like a robot. On the other hand, if you walk all over the place, you’re kind of like a drunken sailor.”

The healthy human gait is somewhere in between — most like the pink noise. Stergiou’s hope is that his team could help individuals suffering from an irregular gait — perhaps due to Parkinson’s disease or a stroke — by having them walk to this pink noise that mimics healthy gait.

“We found that you are actually capable of following this (music pattern),” Stergiou says. “We found that elderly people with compromised gait who walk to music with a pink-noise beat exhibit gait that is similar to healthy people.”

The specific song or music genre doesn’t particularly matter — it’s the rhythm or the nonrandom, nonpredictable beat.



Hutton is a surgeon at OrthoWest in Omaha.

“It’s not Fur Elise, itself, it is the distance between the beats which is very important,” Stergiou says. “We believe if you train with this structure, in terms of the beats, that will eventually be good for you ... and help you walk better in the future.”

Surgery Sounds

Music — as UNO’s Perkinson notes — can help patients relax, but its effect doesn’t have to be limited to the waiting room. Music often blares in the operating room, too.

And it turns out that Bob Marley and Snoop Dogg might help surgeons best.

A study published in 2010 by UNO researchers found that music has a beneficial effect on surgical performance. The study tested medical students in performing two surgical tasks that required significant dexterity and coordination: suture tying and mesh alignment using the da Vinci robotic surgical system.

The students, who had limited experience with the system, performed the study with no music and while listening to songs representing four different genres — jazz, classical, hip-hop and Jamaican. The genres were selected based on interviews with surgeons on the music most commonly heard in operating rooms.

What did they find?

All participants performed the surgical tasks more efficiently and effectively while listening to music. And the most significant improvements came when they were listening to hip-hop and Jamaican music — music with high rhythmicity.

That didn’t come as much of a surprise to Stergiou.

“Again, we are talking about rhythmicity. That is important. The rhythm is very, very important. That

could be a common denominator with the other study (on gait).”

The principal investigator for the study was Ka-Chun “Joseph” Siu, who then was a postdoctoral student working with Stergiou. He now is an assistant professor in physical therapy at the University of Nebraska Medical Center.

Kirk Hutton, a former two-time Academic All-American football player at UNO who now is an orthopaedic surgeon at OrthWest in Omaha, says he listens to music in the operating room.

“My ‘go to’ is country and then some old rock and pop stuff,” Hutton says. “I find that it helps me concentrate more. If a room gets too quiet, I feel like the tension goes up. With music in the background, I tend to be able to concentrate and focus a little more.”

Hutton, a 1984 UNO biology graduate, estimates that 90 percent of the surgeons at the orthopaedic hospital listen to some type of music. Hutton says he performs about 15 surgeries per week; he specializes in shoulder surgeries. Often he’ll consult with his OR team — which usually includes four other individuals — before selecting the music.

“The nurses have a list of what the doctors like to listen to,” he says. “Mine says country. But a lot of times, I’ll go around the room and ask the anesthesiologist or the nurses, ‘What do you want to listen to?’ So we kind of pass it around a little bit.

“But they all know if a case gets tough or technical, we’ll need to turn the radio back to country.”

For those in the waiting room, classical sounds are what soothe. For those struggling to walk, the Go-Go’s might help them go-go.

Sound choices for sound health.

“If a room gets too quiet, I feel like the tension goes up. With music in the background, I tend to be able to concentrate and focus a little more.”

SOUND OFF

It's not just muscle that gets Maverick athletes moving. Music does, too.

Here's what five UNO student-athletes jam to when they want to get the competitive juices flowing.

with Kimberly Bailey



LOGAN MENDEZ

SOCCER, SENIOR DEFENDER/MIDFIELDER

FAST CARS AUSTIN FRIESE
OVERLOAD LIFE OF DILLON
NO BEEF AFROJACK, STEVE AOKI

"Fast Cars" gets played in part because Friesen is a bud of Mendez from Grand Island and "Overload" helps the senior clear his mind.

But "No Beef" is this Maverick's go-to song. "I have to listen to it before every match," says Mendez, who scored the first goal in program history. "My favorite type of music is electric house and the beats in this song alone get me psyched."



CHELSEI ROHLOFF

SOCCER, SENIOR FORWARD

BLACK BIRD BEATLES
EXPLOSIONS ELLIE GOULDING
WORK REMIX \$\$AP FERG

"Explosions" and "Work Remix" get Rohloff pumped. But that's not what's always needed. Rohloff, All-Summit last year, says she gets nervous before games. "I get really bad anxiety," says the senior from Papillion-La Vista. The slow-paced "Black Bird" soothes any ruffled feathers—and delivers a subtle message: "'Black Bird' talks about learning to fly and breaking free," Rohloff says. "It's a good way to calm myself down and just envision myself letting go and putting everything I have out on the field."



KIMBERLY BAILEY

VOLLEYBALL, SENIOR LIBERO

ALL OF THE LIGHTS KANYE WEST
IN THE BEGINNING K'NAAN
SHUT UP AND DANCE WALK THE MOON

Don't be surprised if you hear some serious thumping in the bowels of Baxter Arena right before the UNO volleyball team takes court.

"Music is a big part of my personal prep for games and plays a key role in the team's warm-up/prep in the locker room before matches at home and on the road," Bailey says. But just before the first serve drops, only one song will do for the senior from Lincoln North Star—"Shut Up and Dance." Says the one-time UNO Alumni Association intern: "It keeps me loose and ready to have fun."



TYLER FOX

BASEBALL, SENIOR PITCHER

SKY IS THE LIMIT REBELUTION
WORK BY SLIGHTLY STOOPID
FEEL ME FLOW NAUGHTY BY NATURE

A two-time All-Summit pick and the 2014 Summit League Pitcher of the year, the big righty from Thornton, Colo., often plugs into "Sky is the Limit," but come game time he wants to make sure he doesn't get too high. "For me, my pre-game music is all about finding the balance of relaxation and focus," Fox says. "It is important to always maintain my emotions as a pitcher and all of these songs aid in that mindset."



MIKAELA SHAW

BASKETBALL, JUNIOR FORWARD

HEART OF A CHAMPION NELLY
SIRIUS ALAN PARSONS PROJECT
PARTY IN THE USA MILEY CYRUS

Mikaela Shaw teams with Nelly and she almost jumps out her skin. "All of the songs get me pumped for whatever it is I'm about to do, almost to the point of giving me goosebumps," says the Deweese, Neb., native and a Summit League Academic All-League pick last season. She also led UNO in scoring and rebounding last year, and no wonder given her music choices: "'Heart of a Champion' especially helps me visualize not only winning, but also the preparation I put in and how I need to perform on the court in order to come out on top."

the SCIENCE voodoo of GOALTENDING taco cannon

By Nolan Searl, University Communications

Fresh off leading UNO to its first Frozen Four in school history, former Mavericks goaltender Ryan Massa is training for the NHL at Motto McLean Ice Arena in Hitchcock Park.

Outside, it's a humid July afternoon. Inside, things are heating up even on the ice as Massa trains.

Rather than stopping pucks, though, Massa is guarding against volleys of eggs, cheese and spicy chorizo sausage wrapped tightly in warm tortillas.

What? Is this some New Age training method?

Nope. It's the UNO version of **Man vs. Food**.

More specifically, **Ryan Massa vs. Voodoo Taco Cannon**.



Voodoo Taco Blasts Off

The world got its first look at VTC in April when Eric Newton, owner of Omaha's Voodoo Taco restaurant in Aksarben Village, unveiled it on social media. His posts quickly went viral and USA Today, Huffington Post, CNN and other national news sources soon featured the cannon.

Newton just wanted a bit of publicity to promote his restaurant's partnership with UNO's new Baxter Arena.

"We were just going to have the logo on the ice," says Newton, a one-time UNO student. "Then I told them, 'Well, we have this taco cannon...'"

So instead of staring at a logo under an inch of ice, Maverick fans in Baxter Arena can get the Voodoo Taco messaging blasted at them inside a chicken or steak taco.

Sports fans in the area, of course, are no strangers to food flying at them at high rates of speed. At sister school UNL, "Der Viener Schlinger" has been launching hotdogs during football games for almost 20 years.

But tacos?

That's uncharted territory.

The carbon dioxide-powered cannon can fire tacos more than 300 feet and top 100 mph, says Newton. That power was on display in April when Newton fired tacos across Center Street from Voodoo Taco to fans standing outside Baxter Arena.

But could Newton get a taco past one of the best goalies in UNO hockey history?



Science on Ice

Massa, 25, has been a goaltender for more than 20 years. So he has some degree of expertise when talking about the science of his sport.

"The science of the training of goaltenders is completely different than any other position," says Massa, the Frozen Four Midwest Regional MVP. "I am very detailed on the specifics when it comes to goaltending. It can be something like adjusting the angle of my hand by a few degrees to be more successful. It is a very meticulous and detail-oriented position."

Aaron Gorshe, the team's athletic trainer, says great goalies are strong in three areas: mental toughness, technical soundness and athleticism. He creates workouts made especially for Massa to help him improve in each area.

Unlike other hockey players, who skate in bursts of 30 to 40 seconds, goalies remain on the ice for the entire game.

"The first thing we look at is the metabolic demand of the position," Gorshe says. "What type of areas do we need to train so that they can have the most energy for the longest time?"

"A goalie needs to have a strong cardiovascular base. Much like a skater, but they do not need to be big, bulky and powerful. They need to be explosive."

Some skills, though, can't be taught. Like Massa's 20/10 vision.

"It's huge," he says. "It makes my job way easier."

No matter what he's trying to stop.

Massa realized his eyesight was above-average when he was practicing goaltending in his garage catching tennis balls. His family had a machine that could shoot them at close to 100 mph.

"My mom would write numbers on them, and eventually I was able to pick them up," Massa says. "I would say, 'red 20, or 'black 4'" as I sat there with my goalie stuff on just practicing catching the balls."

Gorshe incorporates hand-eye coordination into Massa's workouts, too. One of the exercises puts Massa into a goalie stance while he juggles balls off a wall.

"The biggest thing is a goalie doesn't skate," Gorshe says. "All of their movements are up and down and side to side. Off ice, we try to replicate those movements."

It is all about balance, stability and mobility. A good goalie needs to master these skills while tracking movement all over the ice. They also have to be explosive and have a wide range of motion to cover the 6-foot-wide goal.

Training and constant repetition make such movements second nature for goalies.

"During the game, all of the preparation that I do leading up to it makes it feel effortless for me," Massa says. "I am not thinking. I am just simply reacting based off of my surroundings and the environment."

Mental acumen is key, too.

"You'll hear goalies tell you that it takes a different breed to be a goalie, in terms of personality," Gorshe says. "You are all alone back there. I would say being able to hold your own mentally, above all, is the most important thing."

Massa agrees.

"It's preparing days at a time before the game with constant repetition, visualization, intense meditation, so when I get to those games, I am able to control my heart rate and stay calm," Massa says.

Stop that Taco

In 28 starts last season, Massa recorded 827 saves, stopping almost 94 percent of the shots hit his way.

But not one of them was a taco.

That changed when he and Newton hit the ice at Hitchcock in July. Newton charged his cannon with CO₂ and let one fly.

The first shot hit the goalie square in the chest. He didn't even flinch, but not for lack of impact. It was a soft taco, but Massa said it felt as hard as a puck sent by an opposing forward with a full swing.

No tacos reached the net. Time after time, Newton sent tacos screaming at Massa. Not one scored.

Sometimes, Massa wouldn't even budge — if the taco was even just a foot wide of the net, he just stayed put knowing in an instant it was errant. All it took was a quick shuffle to the side to stop the ones on target.

Massa didn't get a glove on the last one, but did stop it with his face mask. A bit of chorizo got into his eye, reminding him of the time club teammates dared him to get pepper sprayed. Massa washed the chorizo out with his water bottle and the taco shoot came to a close.

Massa spent the rest of his summer prepping for a pro career.

He since has signed with Orlando of the ECHL, a mid-level professional hockey league. He hopes that leads to an NHL career.

Wherever he plays, one thing's for sure — no matter what is shot at him — puck, taco or any other food item — Massa will be there to stop it.

See video of Ryan Massa taking on the Voodoo Taco Cannon at <http://unoalumni.org/tacocannon>

BACKWARDS BICYCLE THAT BENDS YOUR BRAIN



By Wendy Townley

Let's step back in time, shall we?

You're young — perhaps 5 or 6 years old. The shiny new bicycle you received for your birthday is just begging to be ridden. It's something you've dreamt about for months, ever since you saw other kids zooming past your front porch one balmy summer evening.

"They make it look so easy," you think to yourself.

You eventually find out, after much practice, that it is easy. And as the old saying goes: once you learn, you never forget.

Understanding just what happens in your muscles and your brain as you learn to ride doesn't much matter.

Until, that is, the time comes to unlearn how to ride a bicycle.

Huh?

During Welcome Week in late August, UNO students, faculty and staff took turns finding out just how difficult it is to unlearn how to ride a bicycle by taking turns on a backwards bicycle.

The revised engineering on this unique bicycle is easy enough to grasp — it goes left when turned right and right when turned left.

Riding the bike ... not so easy.

Many asked if there was a "trick" to riding the backwards bicycle. Nope. It just turns differently.

None of those brave enough to hop on could complete a full revolution of the pedals before tipping too far right or left. Their journeys lasted just a foot or two before they plopped down one of their feet to ensure a safe landing.

You Think You Can Ride It. You Can't.

Rubberneckers were convinced they could master it.

I could do it, more than a few were heard to say. They climbed aboard.

They couldn't.

"That's so weird," says an out-of-breath Austin Martinez as he nearly hit pavement near the Pep Bowl. Martinez is a UNO student who learned to ride a bicycle around age 3. Today he regularly rides for recreation.

"The balance is off. And the handlebars are uncomfortable," he says. "I have to think more about riding this bike. With my own bike, it's just so natural. If I had a few days, maybe I could learn to ride this one."

There's a lot that — unconsciously — goes into riding a bike: downward force on the pedals; body lean forward, aft and to the sides; pulling, pushing and turning handlebars.

The UNO bike was inspired by a YouTube video featuring Destin Sandlin, host of a science-focused website, www.smartereveryday.com. He practiced riding his bike five minutes each day and mastered it ... eight months later. His young son, who had been riding a bike for three years, learned to ride a smaller version in two weeks.

Just keeping the bike in a straight line proves impossible for beginners.

Jim Harrold, a doctoral candidate and instructor with the School of Public Administration, rides his own bicycle a few times each week with ease.

But this backwards bicycle? Harrold found it difficult to both balance and pedal.

"Yeah, it was scary," he said during Welcome Week. "It doesn't steer."



A BICYCLE BUILT TO CONFUSE

In preparation for the Fall 2015 issue of *UNO Magazine* and its focus on STEM (Science, Technology, Engineering and Math), the UNO Alumni Association commissioned construction of the backward bicycle with a little help from the Peter Kiewit Institute.

It's a vintage bicycle, donated by former UNO student Jai Gonzales, who now works at Omaha's Community Bike Project. The chocolate brown and mustard yellow relic has been in Gonzales' family since the 1970s.

Civil engineering graduate students Mitchell Kowalewski and Kelvin Lein were given the bike and asked to take apart and reassemble its steering components so that it went left when turned right ... and vice versa.

"The concept of this project seemed intriguing," says Kowalewski, who spent about 20 hours on the bicycle in the machine shop at the Peter Kiewit Institute on UNO's Pacific campus. "It's a unique project. You think it's very simple (to ride). I'll just turn right instead of left, and left instead of right. But it doesn't work that way."

Finding nuts, gears and other parts for the nearly-40-year-old bicycle proved challenging, but not nearly so as riding the retrofitted bicycle.

Kowalewski lives about a mile away from the Peter Kiewit Institute and rides his own bicycle back and forth to campus. He laughs at the thought of riding the backwards bicycle on a regular basis.

"I think I'd have to keep it and ride it every day (to learn how to do it)."

Go to YouTube to see how Smarter Every Day's Destin Sandlin mastered a backward bike. Search "Backwards Brain Bicycle - Smarter Every Day 133"



Above: Reassembled gears in the handlebar makes the bike steer in reverse.

At left: Student Katie Dykstra asked to borrow a nearby helmet before hopping on.

Harrold says the experience reminded him of learning to drive a forklift years ago when he worked in a lumberyard. A forklift's steering uses its rear wheels to turn – not its front wheels, as in the majority of cars and trucks.

Student Katie Dykstra asked to borrow a nearby helmet before hopping on. Like so many others before her on campus, she wobbled and started to tip one or two seconds into her (very brief) ride.

"This is a very odd bike," says Dykstra, a bit exasperated. "I know now that it doesn't turn normal."

More than two dozen people of all ages and skill levels tried riding the bicycle. Height did not matter. Weight did not matter. Age did not matter. Gender did not matter. Athletic skill did not matter.

None could ride it.

It's All in Your Head

What did matter was not skill level but how long ago riding a bike was mastered. Those who perfected cycling at a young age simply never forget.

And because the childhood experience stuck so well, learning a new way to ride a bicycle takes far more time (and patience).

Here's why.

For anyone, at any age, who can ride a bicycle, learning how to ride this backwards bicycle takes a very special set of skills: first

unlearning the traditional way of riding a bicycle, then learning how to ride in this very new – and, if we're honest, very awkward – way.

It starts neurologically, explains Dr. Nick Stergiou, director of UNO's Biomechanics Research Building, the Nebraska Biomechanics Core Facility and the Center for Research in Human Movement Variability. Stergiou and his graduate students have performed a number of studies on backwards locomotion and how it impacts rehabilitation after injury or a surgery.

"The brain is very plastic. But it creates certain routes, certain roads," Stergiou says. "Imagine that you have water flowing through the ground. The more the water goes through (the ground), the more it eats up and the more it creates a direct formation. Your brain works like that. It makes connections. When you do something again and again and again and again, those connections deepen and deepen and deepen and deepen."

The more you practice riding a bicycle, the more you strengthen the skill set, both in your muscles and in your brain. The more years you ride, the more difficult it becomes to unlearn how to ride. As in Stergiou's water analogy (in this case, the brain), charting a new path (a new neuromuscular network) takes time.

Lots of it.

"For the whole system to learn, we continuously create these networks," says Dr. Mukul Mukherjee, an assistant professor who works alongside Stergiou in the field of motor learning. "The sensory systems are working when the task is performed, and new sets of neurons in the brain get involved. The first time you're successful, things start happening differently."

Different sets of neurons get more and more consolidated. Synapses form between neurons in the brain. These synapses become stronger and stronger, branching more and more. As a result, the range of networks gets smaller the closer you get to mastering the skill. And these networks consolidate over the years.

Breaking these networks is possible. Very, very difficult, but possible.

"When you are unlearning (a task), it will only happen if the same network is being used for an exactly opposite task," Mukherjee says.

And there are ramifications. After Smarter Every Day's Sandlin finally mastered a backward bike he "forgot" how to ride a normal bike, looking just as awkward on it as his first time on the otherwise-engineered model. After 15 minutes of trying, though, Sandlin said it felt like something "clicked" and he once more could ride a normal bike.

You don't have another brain and a second set of muscles to use exclusively for riding the backward bicycle. Which means your brain and muscles that have perfected riding a bicycle "the right way" must now unlearn, then learn, how to ride it "the wrong way."

Stergiou, Mukherjee and other experts agree: age plays a sizable factor. A young child who has ridden a bicycle for only two or three years would have an easier time learning to ride a backwards bicycle (again, unlearning "the right way" and learning "the wrong



Dr. Mukul Mukherjee



Dr. Nick Stergiou

way"). Those neurological networks simply aren't as established as someone who has ridden for half a century or more.

Spinning Truth

Dr. Jeffrey French, a UNO psychology and biology professor, has been riding his bicycle for 55 years.

"I got my first bike at age 5 or 6. As a kid, I look back and really enjoyed the freedom it gave me to go where I wanted to go, to do what I wanted to do," French says. "Now I cycle because it's a fabulous way to maintain cardiovascular fitness without running, which is tough on the knees."

During the warmer months, French can be found cycling with friends along the Wabash Trace Nature Trail in Council Bluffs and the Loess Hills National Scenic Byway in western Iowa. During the winter, French is indoors on stationary bicycles. He also teaches a spinning class at HPER for Campus Recreation.

But French is just as much of an expert on the human brain as he is the bicycle. He founded UNO's Callitrichid Research Center in 1983, which studies behavioral neuroendocrinology.

It's true, French says, that you never forget how to ride a bike ... at least the first time.

"There's a longstanding psychological phenomenon that refers to reacquisition of a skill, especially when you train an animal or a human for a reward or personal accomplishment," French says. "When we reinstate the training (of a task), the time to reach 'the end' is much less than the first time. A well-learned response is never forgotten; those traces remain. And we know that it takes fewer trials for the person or animal to relearn that task."

French also points to the psychological process called attention, which is required when learning something new. The brain has a finite amount of additional processes, which leaves little room for much else.

"If you're learning how to ride a bicycle," French added, "it's not a great time to also learn times tables or remember phone numbers."

Even more so, it appears, if you're unlearning to ride a bicycle.

CLASS NOTES

Send your classnotes to www.unoalumni.org/classnotes. Or, post your note on the UNO Alumni Association Facebook site: www.facebook.com/UNOAlumni

53

LARRY ALAN BOERSMA (BA)

recently appeared before the Florida Fish and Wildlife Conservation Commission speaking on behalf of Florida black bears and panthers. He writes: "I'm also keeping busy making presentations to various groups based on the contents of my latest book, *Florida Animals for Everyday Naturalists*. I have, or will be, talking to Audubon and Sierra groups, at libraries, a senior center and even a power squadron (a Coast Guard affiliated group). Retirement? What's that?"

66

JOHN A. PARISH JR.

(BGS), lives in Blanco, Texas, and writes "Enjoying retirement in the Texas hill country." jparrishjr@gmail.com

68

WALT MCCOY (BA)

won five medals in swimming at the 2015 State Games of America held in Nebraska. He took gold in the 50-meter freestyle and the Masters Relay, as well as silver in the 50-meter butterfly, 50-meter backstroke and 50-meter breaststroke. McCoy trained at the UNO pool over the summer and sends his thanks to the HPER staff.

71

CATHERINE POPE

(BS) recently returned to UNO to discuss her new book, *In Search of the Crown ... Memoir of a Black Beauty Queen*, in the Criss Library.



The book shares Pope's life story as the first black woman to win a city title in the Miss America pageant organization and the strong reactions she received afterward. Omaha World-Herald columnist Janice Gilmore has said *In Search of the Crown* "is not only deeply moving and powerful, but has the ability to bring one to cheers or tears as you travel through her life story."

75

CAROLYN KAUFMAN NELSON

(BS), dean of California State University, East Bay's College of Education and Allied Studies



(CEAS), was named interim provost and vice president of academic affairs for the university.

"I am privileged to be given the opportunity to lead Academic Affairs and serve the university," Nelson says. "I look forward to networking and leveraging the expertise and incredible strengths that reside in each of the colleges. There are so many innovations occurring at East Bay. It is an exciting time to part of this vibrant community."

77

JOHN FEY (BS),

published the book *A Date With Destiny*, an account of the people, behind-the-scenes planning and fundraising efforts that led to the Baxter Arena. A collaborative effort with Don Leahy, UNO Athletic Director Emeritus, the book highlights the origin of the Maverick hockey program, the decision to move into Division I and



the community leadership that led the way. To order your copy, mail a check for \$16 (postage included) to Book UNO Athletics, 6001 Dodge Street, Omaha, NE 68182.

JOHN EARLEY (MS) lives in Mechanicsville, Va., and writes, "I retired after 37 years of teaching and won the Virginia Division 5 state softball championship the same day. Great way to go into retirement!"

jeasley@hcps.us

81

WILLIAM OJILE (BS)

joined Armstrong Teasdale's Litigation Practice and is a partner based in the firm's Denver office. For more



than 25 years, Ojile has been resolving difficult legal and policy issues for higher education institutions and telecommunications companies. He is also an in-house counsel and private practitioner, defending companies in administrative, state and federal cases.

82

RANDY STEVENSON

(BS), partner at Baird Holm LLP in Omaha, was elected as a Fellow to the College of Labor and Employment Lawyers. Election as a fellow is the highest

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83 AILEEN HOPGOOD WARREN (BS) lives in Omaha and was

named assistant vice chancellor for business and finance and director of human resources for the University of Nebraska Medical Center. As HR director at UNMC she oversees employee benefits, the Center for Healthy Living, the Childcare Development Center, and ER.

85 ZAN BOCKES (BA) published her personal essay "Notes From a State Hospital" in the 71st issue of *Kaleidoscope*, a magazine that

expresses the experiences of disability from the perspective of individuals, families, friends and healthcare professionals. Bockes says, "My bipolar disorder has been hugely responsible for shaping my poetry and fiction and supplying me with an infinite source of material."

87 WILLIAM "BILL" BLACK (BGS) joined the Office of the Nebraska

State Attorney General as a Sworn LEO/ Investigator to start the Violent Crimes Unit in 2003. He later became chief investigator of the same unit and was responsible for assisting local law enforcement agencies with the investigation and prosecution of violent crimes from their jurisdiction. In 2012 Black became chief of investigators for the attorney general's office and state administrator of two statewide law enforcement programs. wwblack18@hotmail.com

88

KAREN TIDWALL (BA) was named to *Wisconsin Law Journal's*

2015 Women in the Law, which honors the top Wisconsin women



attorneys and judges for their outstanding leadership and achievement. Tidwall is a litigation

shareholder in Whyte Hirschboeck Dudek S.C.'s Milwaukee office. "We are very proud of Karen's recognition as one of Wisconsin's top women in the law," said WHD's Chief Executive Paul Eberle. "This award recognizes her admirable leadership and dedication to the success of both her clients and the greater community."

PAMELA WEBSTER FEE (BSN) lives in Omaha and writes, "Totally retired now and a hundred percent disabled with Meniere's

disease. I do a little community health teaching for community health aides, but other than that I sit back and watch the Mavs — totally retired and living the good life." ladyrace44@gmail.com

89

SUSAN GEORGE

(BS) recently relocated to Yokosuka, Japan, to work at a ship repair facility. She works in the Japanese regional maintenance center as the environmental, safety occupational health director. Sgeorge033@aol.com

96

STEVE COSTANZO

(BGS) brought St. Cloud State its first intercollegiate athletics national team title in any sport. Under Costanzo's coaching, Huskies wrestling made school history by claiming its first NCAA Division II national team championship.

20

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05**RANDA ZALMAN (MA)**

chief strategy officer of Redstone, an Omaha-based marketing and communications firm, joined the executive management team



as a partner. In addition to helping Redstone and its clients actively set and achieve strategic goals, Zalman makes significant

contributions to the firm through leadership, business development and organic growth, organizational and operational improvement and professional development.

06**NICK SQUIRE (BA)**

was recently named the first full-time staff recording engineer for the Boston Symphony Orchestra. Nick's association with the



BSO began in 2009 while he was a graduate student at McGill University and handled audio for the Tanglewood summer season. Nick makes

his home in Brookline, Massachusetts. slysqui@gmail.com

PETROS KYPRIANOU (MA) was named the head track and field coach of the University of Georgia. He says, "I can't thank Coach [Wayne] Norton enough for, first of all, bringing me here and letting me take charge of the field events. He has been a mentor and friend. I thank him for the opportunity to be at Georgia."

10**AMANDA IWANSKY (BA)**

was inducted into her high school's hall of fame. Iwansky earned a spot in Columbus High's 2015 Discoverers Athletic Hall of Fame for her accomplishments in volleyball, soccer and basketball for which she was also named Columbus High Athlete of the Year in 2005.

IN MEMORIAM

A listing of alumni whose death the UNO Alumni Association has received notice of since Jan. 1, 2013. Years indicate graduation from UNO.

1935	Olive H. Blazek
1942	Ruth Moeller
1946	Kenneth L. Hightower
1947	William W. Musgrave
1948	Harvey L. Hayes
1950	Bradley C. Field
	Harry J. Conrey
1951	John C. Overfelt
1952	Carol L. Douglas
	Edgar J. Lang
	Gene S. Brown
	Robert S. Bruno
1953	Raymond D. Hampton
1955	Dorothy E. Marx
1956	Diane M. Hamsa
1961	Gerald A. Christiansen
	Raymond V. Sundberg
1962	Doris R. Visser
1963	Homer D. Hayes
	Robert E. Hemenway

1964	Frank B. Evans		Marcia Z. Cohen
	Gerard Laliberte		Robert H. Johns
1965	Clifford H. Bewig		Therese M. Rosse
	John Embroski		William Parker
	Patricia E. McNamara	1974	Gordon Bunch
	Phyllis L. Boe		Judy A. Maliszewski
	Quinan H. Born	1975	Robert J. Smith
	Thomas J. Micek	1977	Ricki L. Azeltine
1966	Billy J. Wright	1979	Barbara L. Rippey
	Ralph L. Hueser		Kenneth L. Sieckmeyer
	William E. Koontz	1980	Charlie M. Parker
1967	Richard G. Freund	1982	Patrick R. Esser
1968	Irene A. Hultman	1983	John A. Hier
	Walter L. Lee	1984	Algimantas S. Drazdys
1969	Joseph A. Ponseigo	1985	Janice Meredith
	Raymond E. Smith	1986	Betty L. Horst
	Richard J. Yeshnowski		Larry Meysenburg
	Theodore J. Taranowski	1987	Anthony Schuetz
1970	Michael G. Pelowski		Jane A. Sandoz
	Ralph E. Rieckman		Ramona Eigbrett
1971	William R. McBride	1992	Michael Jarvis
1972	Christina K. Groves		Scott L. Johnson
	Harold D. Vanlue	1993	Eileen L. Irvine
	Neal C. Brayton		Paul L. Tatum
1973	Clark Vanskiver		Tracey M. Cullan
	Donald Trakel	1996	Nancy A. Vondra
	Gordon L. Kuklish	2000	Connie L. Mitchell
	Jesse E. Sibert	2001	Elizabeth M. Norris
	Jon P. Welch	2002	Julie K. Dillon

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News: _____



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TEEGAN MARIE

ALBANEZ, daughter of Jake and **Brittney (Stanke, '14)** of Omaha and granddaughter of Betty Albanez ('95) of Bellevue, Neb.

JACK EDWARD LEE

DOSTER, son of Jonathon and **Krystal (Hudecek, '06, '12)** of La Vista, Neb.

CLAIRE ELYSE

ELSASSER, daughter of **Danielle (Fisher, '06)** and **Brian ('07) Elsasser** of Omaha and granddaughter of **Rosemary Henn ('96)** of Omaha.

KINLEY RAE ERDEI

daughter of **Daniel** and **Melissa (Vlach, '04) Erdei** of Omaha and granddaughter of **William Vlach ('75)** of Omaha.

LINCOLN JENSON KROS

son of **Jennifer Larson** and **Michael J. ('98) Kros** of Omaha and grandson of **Pauletta ('72)** and **Michael L. ('72) Kros** of Omaha.

RYKER JENS

LAMBRECHT, son of **Devyn** and **Kristen (Ackerman, '09) Lambrecht** of Omaha.

NORA ELLIOTTE

MROCZEK, daughter of **Anne (Boyd, '13)** and **Adam ('10, '13) Mroczek** of Omaha.

GAVIN ZACHARIAS

PROTHMAN, son of **Stephanie (Pithart, '06; '08)** and **Scott ('07) Prothman** of Aurora, Colo.

ETHAN GABRIEL

RAMIREZ, son of **Yan Weng** and **Eric ('09) Ramirez** of Omaha.

CORA ELIZABETH

SCOTT, daughter of **Christopher** and **Amy (Golden, '98) Scott** of Omaha.

LENA CATHERINE


SOLBERG, daughter of **Tom** and **Hanna (Wanzenried, '07, '13)** of Omaha and granddaughter of **John Wanzenried**, retired associate dean of UNO College of Arts & Sciences.

OLIVIA ANN SORENSEN

daughter of **Kerry** and **Keven ('11) Sorensen** of Omaha.


ELLIOT JOHN THOENE

son of **Morgan** and **Brandon ('12) Thoene** of Ralston, Neb., and grandson of **John Patrick ('02)** of Ralston.



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- ① **BLACK BAND** – Forms the letter U for “University” on the bottom.
- ② **RED BAND** – Forms the letter N for “Nebraska,” which is why red is always on the top.
- ③ **BAND FORMATION** – Together these two bands form the letter O for “Omaha” and represents how UNO is interconnected with the Omaha area.
- ④ **MAVERICK HORNS** – The ends of the bands are pointed to signify the Maverick horns.
- ⑤ **FORWARD LEANING** – The direction of the icon leans forward to symbolize UNO’s progressive force and Maverick momentum within the region.

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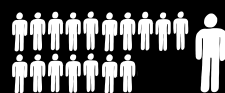
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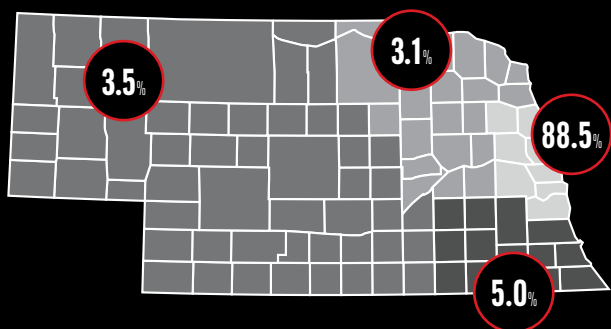
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Baxter Arena opens October 2015 as UNO's **first-ever on campus arena**. Home of Mavericks hockey,
basketball, and volleyball, campus events, intramurals; as well as a venue for a variety of other public events.

SIGHTS & SOUNDS

A look at happenings on and off campus

More Monument Mojo

The UNO Maverick now stands watch over Baxter Arena. In August, workers at the arena installed a bronze Maverick bust onto a pedestal that stands north of the arena's main west side entrance. The bust is an exact head and shoulders replica of the Maverick Monument statue "unleashed" on UNO's Dodge campus in August 2014. The full statue, which stands in front of the Health, Physical Education and Recreation (HPER) building, stands 8-foot tall and weighs 1,600 pounds. The UNO Alumni Association presented the monument to campus in commemoration of the association's 100th anniversary. The Maverick bust at Baxter Arena weighs 700 pounds. It also is a gift from the Alumni Association.



Chuck Hagel

Former U.S. Secretary of Defense/U.S. Senator Chuck Hagel made another visit to his alma mater in May. The 1971 UNO graduate's stop included time in UNO's Military and Veteran Services Office and his first look at the Criss Library exhibit, "Chuck Hagel: Gifts to the Secretary of Defense." The library hosts the permanent U.S. Senator Chuck Hagel Archives.



Summer Works Mural

Representatives from UNO and the City of Omaha gathered at the Sherman Community Center to celebrate work done by 150 high school students over nine weeks this summer. That included the unveiling of a new mural overlooking a community garden. Local artist Kristin Pluhacek designed the mural, brought to life by participants in UNO's SummerWorks Employment Academy, which provides jobs to at-risk youth each summer.



Durango Days

There is such a thing as a free lunch — and free fun. UNO students got plenty of both during the annual Durango Days welcoming students back to campus and celebrating the start of the fall semester.





New Student Convocation

Hundreds of students and parents packed the main HPER gym in August for the New Student Convocation, getting a welcome to campus from UNO faculty, staff, fellow students and the Maverick Maniacs. That was followed by time “hanging” with Maverick Monument.



Summer Sounds

UNO once again sponsored the End of Summer Concert Series at Midtown Crossing at Turner Park featuring some of the area's hottest talent—including the UNO Marching Mavericks.

Next Stop: Maverick Nation

One of Omaha Metro Transit's busses got a new look this summer, getting tricked out in UNO black with a giant O logo. The new ride also is emblazoned with hashtags promoting the #KnowTheO and #WearBlackGetLoud campaigns.



Beneath the Bells

The Henningson Memorial Campanile Plaza was overhauled this summer to include new seating, canopies, lighting and landscaping. It's the most extensive work completed around the 168-foot campanile since its dedication in 1989.



Test your brainpower with these puzzles created by UNO graduate Terry Stickels ('76). An author, speaker and puzzle maker, Stickels' *FRAME GAMES* is published by *USA Weekend* magazine and in 600 newspapers. He has three new puzzle books being published by Dover Publications later this year: "Savage Sudoku," "The Big Brain Puzzle Book" and "Challenging Math Puzzles." For more information on Stickels, or to order any of his books, visit www.terrystickels.com

Mathematics

A 150-pound mixture of chemicals cost \$40. It is composed of one type of chemical that costs \$48 per 150 pounds and another type of chemical that costs \$36 per 150 pounds. How many pounds of each chemical were used in the mixture?

Logic

Imagine you have one metal rod and one magnetic rod and nothing else. How do you tell which is which? You cannot break either rod. Here's the usual answer given:

Tie a string to the middle of each rod and let them hang in a horizontal direction. The magnetic rod will always point to a north/south direction, and it will always return to that position if moved. The other one will stay in any random positioning and will not come to the same position if moved.

Now, can you find at least one other answer?

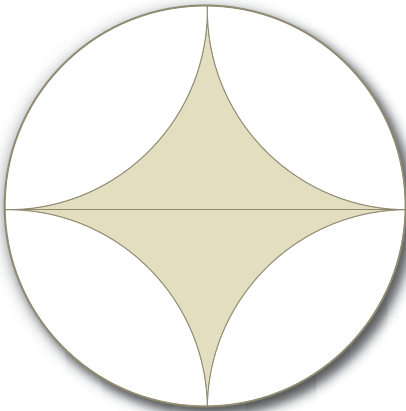
Wordplay

The following is a well-known saying expressed in an unusual way. See how long it takes you to decipher this well-known phrase.

"It is a fact of Newtonian physics that a conglomerate with mass M, sometimes with a constant velocity but most often accelerating, will not have the capacity at any point T in time, to attach itself to any bryophyte."

Visual

The circle below has a radius of 10 units. What is the area of the shaded portion? The bounded, blank portion of the circle that resembles 4 leaves or footballs is composed of arcs made by a compass. The area of a circle is found by $A=\pi r^2$.



Puzzles taken from "The Big Brain Puzzle Book," created by Terry Stickels for the Alzheimer's Association.


Answers
MATHEMATICS: 100 pounds of the \$36 chemical and 50 pounds of the \$48 chemical.
LOGIC: Let the rods be represented by the numbers 1 and 2. Touch the end of 1 to the middle of 2. If it sticks, then 1 is the magnetic rod and 2 is not. If it does not stick, then 2 is the magnetic rod and 1 is not.
WORDPLAY: A rolling stone gathers no mass.
VISUAL: 86 sq. units.

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