

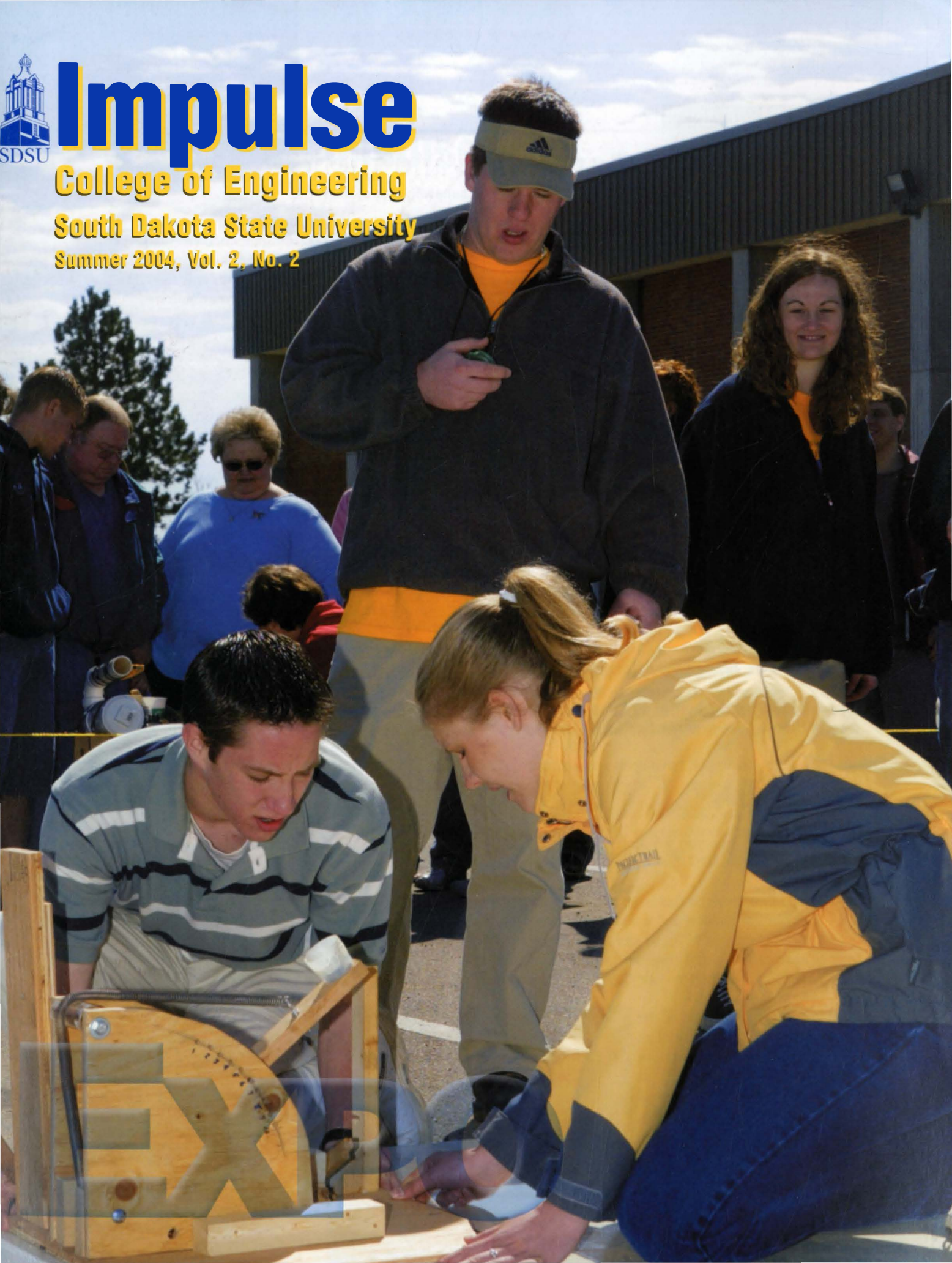


# Impulse

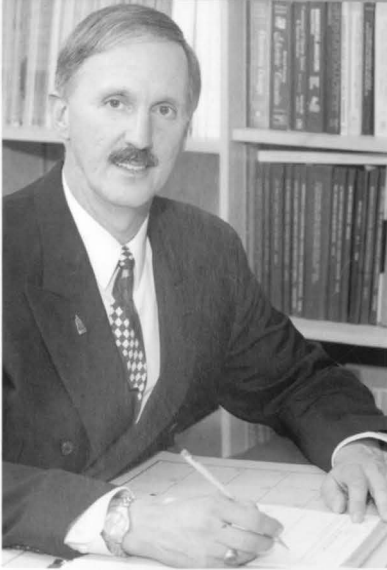
College of Engineering

South Dakota State University

Summer 2004, Vol. 2, No. 2



## FROM THE DEAN



## Dear alumni and friends:

As I prepare this introduction and reflect on the closing of another academic year, I am in awe of the many activities, changes and accomplishments that took place in the College of Engineering. It was a sad year, with the passing of former Dean J.O. Storry, and two of our active faculty members, Mr. Dennis Loban and Associate Professor Timothy Wittig. In this issue we acknowledge their contributions to the College.

Our sadness is tempered with joy and deep satisfaction over the many student and faculty related activities and accomplishments that you will see highlighted in this issue. In that sense, the legacies of our former faculty and leaders remain alive as we continue to deliver "life-changing" educational experiences. In this issue we highlight the achievements of several of our top students, faculty and student organizations.

I think you'll enjoy the special feature on the 2004 Engineering Expo. We had one of the most enthusiastic groups of student organizers I have had the pleasure of knowing and the result was another outstanding Expo experience for the hundreds of high school students who visited our campus. You will also read about the annual South Dakota Regional Science and Engineering Fair, which hosts hundreds of high school student teams competing for the chance to go to the annual international event. It presents an outstanding opportunity for our faculty and students to interact with and encourage young students to pursue a degree in science, engineering, mathematics and/or technology.

There are many opportunities for our students to travel abroad as a part of their studies. You can read in this issue about the group of College of Engineering students and faculty that traveled to England to tour and study in the heart of the Industrial Revolution.

I can't remember how many times I have been asked by alumni, "What ever happened to my physics professor, Dr. George Duffey?" If you are wondering, you'll be delighted to read this issue and find out!

Those in this region have seen and heard the SDSU slogan, You can go anywhere from here<sup>®</sup>, which also is on the SDSU website. What you may not have noticed on the website is that many of the featured Jackrabbits are alums of the College of Engineering. In this issue you will learn more about these graduates.

Also in this issue you will find a column by Tim Reed, BS '88. He is the College's director of development. He is hired by the SDSU Foundation for full-time College of Engineering work, as he will explain in his column.

I have long awaited this issue to highlight our Distinguished Engineers, and I take this opportunity to explain how the nomination and evaluation process works. The process has been updated, but remains true to Dean Storry's charter in 1976, to identify and honor those deserving of our most prestigious award. Please read this feature carefully and consider helping us identify nominees for the award. The complete nomination process is now fully described on our College of Engineering website.

It is that special time of the year when we highlight our donors, and what an impressive list! We continue to rely on the generosity of our alumni to maintain our excellence—we can't do it with only state support. I want to thank all of you for your generosity and encourage your continued support of the College of Engineering.

I hope you enjoy this latest issue. Drop us a line and let us know what you think, or stop in for a visit if you are going to be in the area. Remember, as a Jackrabbit you are always welcome!

Lewis Brown, Ph.D.  
Dean of Engineering



Reaching the stars Page 6



Science and Engineering Fair Page 4

# Impulse

College of Engineering, South Dakota State University

## ■ Features

**Expo's physics wizard captures attention of high schoolers** 2  
*The "Wonders of Science" never get old for Professor Larry Browning.*

**Science and Engineering Fair** 4  
*The campus attracts nearly 500 budding scientists each year.*

**Key donation, cooperation create observatory at Oak Lake** 6  
*Two remotely controlled telescopes will be in operation this fall.*

## ■ Faculty

**A Storry worth telling** 8  
*Co-workers and former students remember late dean Junis Storry.*

**Math Professor Ken Yocom isn't about to retire** 10  
*Long-time department head has taken a new position.*

**Dennis Loban is remembered for quality and precise work** 12  
**George Duffey may be retired, but he is not finished writing** 13  
**Howard Nielsen sharpens the skills of a MATHCOUNTS team** 15  
**Mike Ropp can now measure the speed of wind at more places** 16  
**Derek Hengeveld and Mike Twedt are draft a new energy code** 19

## ■ Students

**Jordan Williams wins the Barry Goldwater Scholarship** 20  
**For the second time in six years, SDSU claims the Ridgway** 22  
**Civil engineering club again claims community service honors** 23  
**Seven students spend spring break in Manchester, England** 24

## ■ Alumni

**Hassoun, Micko, Morgan named Distinguished Engineers** 26  
**From Briggs to Morgan, a list of all Distinguished Engineers** 28  
**Seven engineering grads used in SDSU television campaign** 30  
*Michelle Knuppe, Justin Williams, Thomas Van Lent, Doug Forsyth, Michael Johnson, Kathy Walker, Lance Guymon*  
**Col. Beth Kaspar salutes her alma mater** 47

## ■ Contributors

**Dean's Club** 30-35  
**Donors** 36-46

## ■ About the Cover

SDSU students overseeing the egg scrambler contest at the Engineering Expo watch the clock as high school students prepare to launch their raw egg.

See story on Page 2.

Cover photo by Eric Landwehr.

## ■ Impulse

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Tracing roots Page 24

# ENGINEERING EXPO

Physics wizard captures attention of high school students



It was only 9 a.m. on a picture perfect Friday. Most of the campus was just waking up to a beautiful spring morning but Frost Arena was already a hub of activity April 23.

Excited chatter rose from the bleachers, which were filled with high school students waiting to witness some of the craziest demonstrations they would probably never see in their science or physics classrooms.

They didn't have to wait long. All the chatter subsided when a man wearing a long black robe and a wizard hat welcomed the crowd to the annual Engineering Expo, which has been a major event on campus for more than twenty years.

Soon, the science wizard had every teenager's attention and made jaws drop when he explained some of the mysteries surrounding the speed of light and sound.

Who was this wizard of physics who could make an Aquafina bottle explode with an ear-shattering bang?

Larry Browning, an SDSU physics professor, started performing his "Wonders of Science" show at the Expo when this year's class of high school seniors were just in kindergarten. "I have a lot of fun doing it for the kids," Browning says. "I've been doing this since '91 and it never gets old."

During his show, Browning posed a few scientific questions to his captivated audience:

- Why does an egg break when it's dropped on the floor, but not when it's thrown into a sheet?
- Why do all Christmas lights blink, even when it appears they don't?
- Why does a common water bottle burst when liquid nitrogen is poured into it?

"That was the coolest thing I've seen in a long time," says Jonathan Varns, an excited senior from Sioux Falls O'Gorman High School after seeing the water bottle break. "It was like, 'Whoa!'"

Browning also demonstrated the theories behind mass, gravity, sound, speed, light and resonating frequency.

It usually takes Browning a day, sometimes two, to get everything working correctly for his demonstrations. However, his show does come with a disclaimer--don't try this at home. "It is a little dangerous. I sometimes worry that kids will get the wrong idea and try some of the things I do here at home," he says.

Dean Lewis Brown says, "The purpose of the Expo is to get kids enthused and informed about careers and opportunities in engineering, science and technology."

## Where the jobs are



Paul Bezdiceck



Brian Carstensen

Paul Bezdiceck, of Arden Hills, Minnesota, and Brian Carstensen, of Granite Falls, Minnesota, are both junior mechanical engineering majors and served as co-chairs of the Expo. "For high school students, it is a great opportunity to look at the SDSU engineering program," Bezdiceck says. "It is also a great opportunity for them to see the senior design projects and talk to companies with the new mini job fair that we have started."

Bezdiceck says he hopes it will open students' eyes to the possibilities the engineering field can offer.

In addition to checking out the cool projects and displays, high school students were able to talk to one of the area's biggest engineering employers. Daktronics representatives were on-hand to talk to students about job possibilities.

Eric Grenz, a project manager at Daktronics, says, "We would love to find some good future candidates for the open jobs," he said, "Right now we have about 100 positions that are open around the country."

## Good for teachers too

The event not only gave opportunities to high school students, it also provided a learning experience for their teachers. Hildonna Vande Pol, a math teacher from Rock Valley, Iowa, has been bringing her students to the Engineering Expo for almost a decade.

"It helps them learn to problem solve and gives them a challenge that they have to try to come up with the best solution," she says. "It keeps them motivated to learn and also keeps me motivated to incorporate new ideas into my lessons."

Vande Pol's students like the challenge of trying to figure out how to solve problems in math and science. They say it's not only fun, but also it teaches students how to work together.



## A college senior's showplace

The Expo also is a great opportunity for the college students who have worked to finish their capstone design experience, the culmination of a year's worth of hard work. "It's a significant day for them," Brown proudly says. "College kids get the chance to brag a

*"The purpose of the Expo is to get kids enthused and informed about careers and opportunities in engineering, science and technology." Dean Lewis Brown*

bit about their displays. They have all put in such long hours and they deserve the chance to show off."

Bob Soper, a senior engineering student from Brandon, built a residential power monitor, which shows how much power a household appliance uses. He set up a light, hooked up the monitor and it showed it was using 25 watts.

The device could also calculate how much money it cost a month to have that light turned on. "We've been working for two semesters on this. The first semester we had to design it and the second semester we had to make sure it worked. We spent a lot of hours in the lab, making sure it actually worked," he notes.

## A high school student's playground

During Expo, high school students compete for prizes in several competitions with the top three teams or students in each of event receiving gift certificates.

After Browning's "Wonders of Science," students could wander around and check out some of the other fun opportunities—events like the bridge

builder and rocket car contests as well as the scavenger hunt.

- In the bridge builder contest, students had to construct a bridge using balsa wood and glue. Once it was done, the bridges had to withstand at least twenty-five pounds. The bridges were judged based on load-carrying capacity as well as workmanship and looks. "I tried to

build a bridge but it didn't turn out anything like these guys," says Varns. "It's definitely something to work for in school."

- In the rocket car contest, students build rocket cars to specific requirements with engines that SDSU provided. The winners were based on fastest times.

- In the scrambler contest, students with messy tastes could test structures that they designed by launching an egg that was supposed to hit a target twenty-five feet away and two feet off the ground. The closest egg yolk to the center of the target was scored after each launch.

- In the human wallpaper contest, students tested a gravity-resisting event that was new to this year's Expo. The contest required a team of four students to use fifty feet of duct tape to fasten a team member to a wall. The teams were judged based on the weight of the person taped to the wall, how much tape was used, and how long the person was stuck to the wall. Teams had only five minutes to get their team member taped to the wall.

"I don't know how they did it," exclaims an amazed Katie Stewart, a junior from Lake Benton (Minnesota) High School. "I don't know how they

came up with the best way to attach the girls. That was pretty cool."

Winners found out the less tape they used, the better; and that duct tape is stronger than one might think.

- In the Write It/Do It Contest, half of the team checked out a project, which was made from cheap materials. The students had twenty-five minutes to write a description and construction instructions for the object, without using symbols or diagrams. Remaining team members, who were in a separate room, had twenty minutes to build the original object based on the written description.

- In the Master Minds Obstacle Course, students combined physical and mental obstacles in a relay course. Students received one point for each completed mental task, which was designed to challenge the student's mind in math, science, and engineering. The timed event allowed students one minute to complete each mental task.

- In Physics Bowl XXX, teams competed for prizes by answering questions on topics like basic mechanics, heat and thermodynamics, basic electricity, optics and famous physicists. The top five teams received cash prizes and plaques.

## A student's assessment

At the end of the day's events, students were visibly tired and one could tell they put in a hard day of physical and mental exertion. However, the Expo had earned a top rating.

"I highly recommend it. I had a lot of fun. I not only got out of school for the day, but I actually learned something at the same time," grins Varns. "I wish I could come again next year."

*Greta Stewart*

COLLEGE PLAYS KEY ROLE IN

# science & engineering fair

The award's ceremony had just wrapped up and Madeleine Rose was stopped by a mother, who tells her, "My daughter will be with you next year, she's coming for engineering."

"Whitney has been winning a lot of the engineering and other prizes here for three years," says Rose. "Hearing that she will be attending the College of Engineering at SDSU really makes the science fair interesting and worthwhile."

The student was Whitney Karpen of Elk Point-Jefferson High School, one of 482 middle school and high school students from twenty-one schools who attended the fiftieth Eastern South Dakota Science and Engineering Fair April 2 at Frost Arena.

The fair offers more than \$2,000 in scholarships and awards. An all-expense paid trip to the International Science and Engineering Fair was awarded to two individual champions and one team exhibit. The international fair was May 9-15 in Portland, Oregon.

Students develop projects ranging from physics to gerontology.

"I really like the fact that we encourage students to think about engineering, math, and science as careers, because for many of these students the fair is their exposure," says Rose, who completes her fifth year as fair director.

"We get almost 500 students and they are able to stretch their minds in the sciences and many have developed some really good projects."

## Fair impact campus-wide

SDSU's eight colleges have a lot to do with the mind game. They are each actively involved in the fair, supplying

faculty as judges and sponsoring more than 100 student awards. In addition, the colleges donate money for perpetual plaques that are awarded to the schools whose students win first place.

The fair is supported within the budget of the office of Provost and Vice President for Academic Affairs Carol Peterson along with financial assistance from the SDSU Foundation.

"My philosophy, and why I'm so willing to support it, is that when nearly 500 kids come to campus they will have an interesting experience here and they're going to be better acquainted with this University," Peterson says.

"The fair does a great job recognizing the kids and the teachers who excel in science and engineering," she adds. "Madeleine and I work together to make certain she is covered. She does a great job and is very successful in getting volunteers to help and serve as judges."

There were 332 exhibits this year with the most popular being engineering and physics. Toss in agricultural engineering, computer science, math, and earth science, the College has carved out a special niche in the fair's history.

The engineering awards to the students are varied, from a lapel pin, a subscription to *Engineering Times*, to a \$500 tuition scholarship to enroll in any one of the engineering programs.

"Engineering is probably more involved than some of the other colleges," notes Rose. "It's because engineering and physics have more exhibits and offer more prizes than the other categories. I need a lot of engineering judges. For every ten

exhibits, I need two judges and then I need two-to-four extra judges for the national awards."

Dean Lewis Brown says, "I am very grateful to our engineering department heads, faculty, and graduates who judge for the fair. I suspect that many of us who are actively involved with these young people do not fully appreciate the positive impact that our interest and encouragement has on them."

## Sparking students' interest

Jacob Stricherz, a senior this fall at South Shore High School, was an SDSU grand prizewinner, taking first in the physics category. At the international fair, he won a twelve-week internship this summer at the University of Oregon, where he worked in a physics laboratory.

His project proving that hot water can freeze faster than cold water under the right conditions caught the eye of engineering and physics faculty members.

"I visited with them and most of them liked it," says Stricherz, who took first in the botany division as a freshman. "It's great to have a fair like this. You're learning more and experiencing something new."

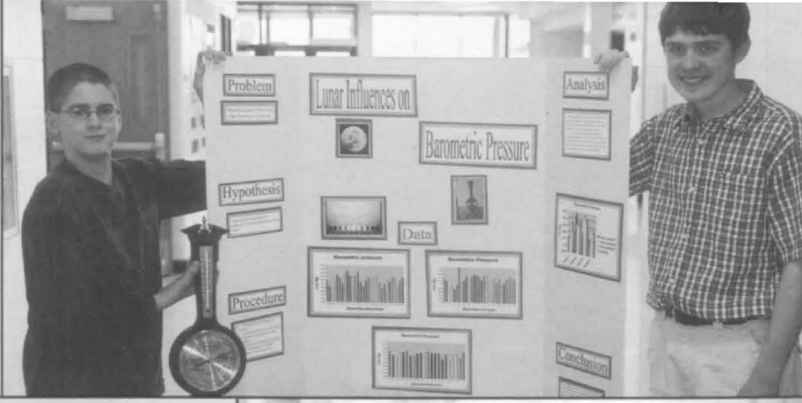
Brown, who serves as a judge and participates in the awards ceremony that's held at the Performing Arts Center, looks forward to the event every year.

"It's one of my highlights of the spring semester," he says. "Many of our engineering faculty visit and judge at the fair to encourage the young people to pursue their interests and consider a career in engineering, science, and technology."

"We also pass out many business cards to the kids and encourage them to stay in touch with us," he adds. "Many of the students we meet end up enrolling in our programs after high school."

Dennis Helder, who serves as a judge, agrees, adding the fair is an excellent opportunity for the college to

**Clockwise, from bottom right:** Josh Chilson of Florence inspects the solution in his beaker as part of his project, "Biodiesel—Fuel for the Future? Phase IV." At the Eastern South Dakota Science and Engineering Fair at SDSU on April 2, he was selected to be an observer at the International Science and Engineering Fair. Hamlin eighth-graders prepared for the Eastern South Dakota fair with presentations at their local fair. **Bottom left:** Julianne Goltz shows off her research project on smart snacks—foods that trigger memory retention. **Top:** Corey Amen, left, and Alex Antonen display their project showing the lunar influence on barometric pressure.



connect with many of the area's rising young engineers and scientists.

"These students come here with tremendous enthusiasm and it is really uplifting to be able to encourage them to pursue their ideas and dreams," says Helder, professor and head of electrical engineering, computer science, and director of engineering research. "Personally, it is a highlight of my semester to talk with these kids. Their enthusiasm is contagious!"

*Kyle Johnson*



## Science and Engineering Fair Judges

- Mike Adelaine, computer services
- Nathan Ahlborn, sociology
- Joanne Anderson, engineering technology, management
- Bob Bell, Brookings
- Julie Bell, human development, consumer and family sciences
- Becky Baer, pharmacy
- Susan Bassett, nursing
- Joyce Billow, Brookings
- Janet Bjordahl, chemistry/biochemistry
- Deniz Blankenfeld, Brookings
- Nancy Blume, nursing
- Lewis Brown, dean of engineering
- Karen Cameron, Volga
- Catherine Carter, plant science
- David Cartrette, chemistry/biochemistry
- Tom Cheesbrough, biology/microbiology
- Carolyn Clague, family youth development
- David Clay, plant science
- Bill Costello, Brookings
- Gloria Craig, nursing
- Basil Dalaly, nutrition, food science, hospitality
- Kevin Dalsted, engineering resource center
- Marty Draper, plant science
- Chandradhar Dwivedi, pharmaceutical sciences
- Cynthia Elverson, nursing
- Ralph Erion, education and counseling
- Pam Evenson, nutrition, food science, hospitality
- Anne Fennell, horticulture, forestry, landscape, parks
- Lee Frantz, nutrition, food science, hospitality
- David Galipeau, electrical engineering
- Lonnie Garrett, Brookings
- Mary Gengler, nutrition, food science, hospitality
- Linda Griffith, nutrition, food science, hospitality
- Matt Gunderson, family youth development
- Fathi Halaweish, chemistry/biochemistry
- Teresa Hall, engineering technology, management
- Glenda Hecht, Brookings
- Harry Hecht, Brookings

- Sarah Hedge, Brookings
- Joan Hegerfeld, family youth development
- Dennis Helder, electrical engineering
- Lori Hendrickx, nursing
- Dave Henning, dairy science
- David Hilderbrand, dean graduate school
- Dennis Hinde, journalism
- Katie Hockhausen, Tri-Beta
- Larry Holler, veterinary science
- John Holter, Army ROTC
- Yung Huh, physics
- Dan Humburg, agriculture and bio-systems engineering
- Larry Janssen, economics
- Patricia Joffer, sociology
- Judeen Johnson, Brookings
- Allen Jones, civil engineering
- Amy Jones, agriculture and bio-systems engineering
- Erika Jones, microbiology club
- Crole Kiecker, sociology
- Padu Krishnan, nutrition, food science, hospitality
- Bruce Kunze, Brookings
- Dave Kurtz, Brookings
- LaVonne Kurtz, Brookings
- Rachel Kurtz, EROS Data Center
- Huitian Lu, engineering technology, management
- Ardelle Lundeen, Brookings
- Robert Maddock, animal and range sciences
- Doug Malo, plant science
- Steve Marquardt, library
- Don Marshall, academic programs
- Katie Murray, Tri-Beta
- K. Muthu, agriculture and bio-systems engineering
- Candice Nebelsick, Tri-Beta
- Lawrence Osborne, plant science
- Shannon Osborne, Brookings
- Scott Pedersen, biology/microbiology
- Gary Peterson, biology/microbiology
- Steve Pohl, agriculture and bio-systems engineering

- Wendy Pudwill, Brookings
- Oren Quist, physics
- Rebecca Randall, nursing
- Marilyn Rasmussen, extension
- Wendy Reid, Brookings
- Walter Reidell, Brookings
- Diane Rickerl, plant science
- Madeleine Rose, ESDSEF director
- John Ruffolo, graduate school
- Mary Ryder, English
- John Schemmel, civil engineering
- Kelly Schmiedt
- Chris Schmit, civil engineering
- Monica Simons, Tri-Beta
- Lisa Star, instructional technologies center
- LaDell Swiden, Brookings
- Matt Taecker, Tri-Beta
- Sung Woo Tak, electrical engineering, computer science
- Barry Threadgold, Brookings
- Dennis Today, agriculture and bio-systems engineering
- Roger Thue, physical plant engineer
- Nels Troelstrup, biology/microbiology
- Mitzi Trooien, Brookings
- Chris Trotter, Air Force ROTC
- Stephen Van Buren, library
- Evert Vandersluis, economics
- Nick Van Elsacker, Air Force ROTC
- Jerry Visser, engineering technology, management
- Judy Vondruska, physics
- C.Y. Wang, nutrition, food science, hospitality
- Haifa Wehbe, U.S. Public Health Service
- Misty Wessel, Tri-Beta
- Allen Whitlatch, education and counseling
- Zeno Wicks, plant science
- Howard Woodard, plant science
- Steve Wuerz, chemistry
- Yang Yen, biology/microbiology



# Reaching the stars

Key donation, cooperation create observatory at Oak Lake

Imagine seeing a distant planet's moons or a star cluster thousands of light years away, all from your own computer.

The Fillbrandt Observatory will provide South Dakota elementary and high school teachers as well as SDSU students, just that—an opportunity to view the heavens via two new remotely-controlled telescopes and a high-speed Internet connection.

The observatory, at the Oak Lake Field Station northeast of Brookings, has been a project in the making for several years, according to Larry Browning, physics professor.

Realization of the observatory began when Browning received word from the SDSU Foundation of a donation of \$21,500 in 1999 from Marian Fillbrandt, a 1933 graduate and former math and science teacher.

Fillbrandt donated funds from her Science Teaching Improvement Endowment for the observatory as well, bringing her total donation to between \$25,000 and \$30,000, according to Jeff Nelson, vice president of Foundation Relations.

He says her science teaching fund will provide opportunities for telescope training for teachers in the future as well.

With the Fillbrandt donation, Browning and former professor Stephen Schiller obtained a grant from South Dakota EPSCoR (Experimental Program to Stimulate Competitive Research). The grant matched Fillbrandt's donation two dollars to one, Browning says.

## Location, location, location

With funding secured, plans for the observatory began to take shape, including a choice of location.

For maintenance of and easy access to the telescopes, an observatory close to campus was needed, according to Browning. A couple of on-campus options were considered, including near the football field and atop Crother's Engineering Hall.

"Brookings is very well illuminated though, so it's not a very good spot for a telescope," says Browning.

He adds that while testing the telescopes in Brookings, blurred images

occurred as a result from the vibrations in the city.

"That's [eliminating vibrations] one of the reasons we wanted a permanent site," he says.

A chance hallway meeting with Nels Troelstrup, biology professor and director of the Oak Lake Field Station, provided Browning with the solution he needed.

The National Science Foundation provided the field station with grant money to make improvements at the station, including new lab and classroom facilities, Troelstrup says. A second grant of \$250,000 was awarded the field station last fall. With the renovations to the station, the need for a high-speed Internet connection became apparent. A new connection would facilitate the sharing of large data sets between Oak Lake and other field stations, according to Troelstrup.

The observatory provides a wireless Internet connection for the field station, while the field station provides an ideal location for the new observatory.

"The fact that we have nice dark skies out there is such a huge plus for





us,” says Judy Vondruska, physics instructor whose role in the observatory has been to facilitate construction.

Troelstrup says having the observatory at Oak Lake will involve the physical sciences in the field station as well as enhance workshops and draw awareness to the station through public school teachers who utilize the observatory.

“We want to have classes to train teachers how to use it [the observatory],” Browning says.

### Opportunities for all ages

According to both Browning and Vondruska, the observatory serves two main purposes—as a place for undergraduate research at the university level, and as an outreach program for South Dakota teachers.

To bring astronomy into their classrooms, teachers will be able to access lesson plans and images, as well as set up times to use the telescopes themselves.

As part of her introductory astronomy class at State, Vondruska says she requires students to develop lesson plans to post on the observatory website.

## There's a little stargazer in all of us

If Judy Vondruska were to wish upon a falling star they spotted at the Fillbrandt Observatory northeast of Brookings, it would be that the new facility would create opportunities for the public to become involved in astronomy.

The observatory at Oak Lake Field Station became operational this fall. Eventually, the physics instructor hopes to host astronomy camps for both students and adults.

In previous outreach work, Vondruska says she has taken five or six telescopes to do evening observatory sessions at several South Dakota schools for students in grades five through twelve. She notes that adults are often just as, if not more, excited about looking at space than are children.

“There’s something about astronomy that intrigues all of us,” Vondruska says.

“There’s quite a bit of interest in astronomy,” she says. “Starting this year, we’re going to be offering two classes of astronomy.” She adds that the department will eventually add some upper level astronomy courses.

This April, two SDSU physics majors, Ryan Claussen and Brad Lowery, each received a grant of \$2,000 from the South Dakota Space Grant Consortium to research near-Earth objects, or asteroids, in conjunction with the Badlands Observatory near Quinn, Vondruska says.

Near-Earth objects will become an area of research at the Fillbrandt Observatory as well.

Another area of research at the observatory will be variable stars. That will document and plot the apparent changes in a star’s brightness. Over time, the light data can reveal much about the star, including its type.

“Discovering variable stars helps us understand better the nature of stars,” she says. “That’s something that a lot of people can get involved in.”

According to a May article in *Astronomy* magazine, robotic observing, similar to that which the Fillbrandt Observatory will offer, has yielded the discovery of supernovae, the bright explosions which mark the death of large stars.

### Astronomical collaboration

Through earlier EPSCoR funding, the Physics Department has two \$1,000 telescopes. One is designed for planetary viewing, such as observing storms on the surface of Saturn or Jupiter. The other allows for deep space viewing, including nebula and galaxy watching.

“Even though it may be considered amateur equipment, it’s very high end amateur equipment.” Browning says.

He says the telescope stands cost about \$10,000. Cameras to capture the scopes’ images cost \$2,500 and \$10,000. Add to that \$25,000 for constructing a clamshell structure, which opens and closes to shield the scopes from the elements, and installation of wireless communications between SDSU and the field station.

The high-quality images collected from the scopes will be sent to SDSU, where they will be stored and then converted into lower-quality images, or smaller files, that can be easily viewed on computers, Browning says.

Since a slight hill exists between Brookings and the field station, the wireless Internet connections are made possible by equipment installed by Milbank Communications on Brookings Deuel Rural Water towers, according to the three professors.

“It’s a cooperation between the field station, biology department, College of Engineering, and the water system providers,” says Browning.

Vondruska adds that the campus radio station has allowed a dish to be set on its antenna.

Planning for the construction began about a year and a half ago, Vondruska says. The clamshell was completed in December 2003. Early this summer, the Internet connection was completed. The observatory is to become operational this fall after the telescopes are tested and moved one at a time to the observatory.

Denise Watt

To learn more about the observatory, or to contact Larry Browning or Judy Vondruska regarding its support, visit <http://www.engineering.sdstate.edu/~fillbran/>.



# A Storry worth telling

Former engineering dean remembered for intelligence, kindness

Engineers have been making their impression on SDSU since Stephen F. Briggs motored out of town with his degree in 1907.

The legacies of Halvor Solberg and Harold Crothers live on through the engineering buildings that bear their name. And, of course, 1909 graduate Charles Coughlin has a well-known tower named after him.

Junis Oliver Storry left not only a physical legacy, such as the Center for Power System Studies and the Distinguished Engineer's award, but the biggest impact is the inspiration he left on future engineers, says Dean Lew Brown.

Brown '84 was a budding engineering student when Storry was in the twilight of his thirty-eight-year career at SDSU.

Storry, who spent almost his entire career at SDSU, died June 15 at White Care Center. The former dean died only about ten miles from Astoria, the small Norwegian community where he was born on March 16, 1920, to Ole and Betsy Storry.

The son of a carpenter and grain elevator worker went on to earn bachelor's and master's degree at State.

## Started teaching in '46

Storry joined a short-handed faculty in 1946 and spent ten years (1972 to 1982) as dean. His only interruption in service occurred in 1964-67, when he attended Iowa State University to gain his doctorate in electrical engineering.

Former Electrical Engineering Department Head Bill Gamble recruited him out of private industry.

The telegram to his former student offered Storry a job in the Electrical Engineering Department, Storry recalled in a 1985 retirement article printed in *The Brookings Register*. A flood of World War II vets swamped facilities and faculty.

"We had to schedule dynamo [electric generator and motor] labs five afternoons, four nights and Saturday mornings," Storry told the *Register*.

## Knew his students

Wayne Knabach '49 was part of that era. "I particularly remember him in the electric power laboratory. That was an area he particularly enjoyed, motors and generators. It wasn't just something to get done.

*"Anybody you talk to will just admire him as an intelligent person. He had a brilliant mind, electrically and mathematically."* Wayne Knabach

"He [Storry] would circulate around visiting with the students. He would ask us what we would like to do, and he would build on that for lab activities. We talk nowadays about independent study. He was doing that back then," says Knabach, who also had a thirty-eight year teaching career at SDSU.

Jim Wilcox, manager of government and regulatory affairs at Xcel Energy in Sioux Falls, met Storry when he was dean.

Wilcox '76 enrolled in Storry's Computer Analysis of Power Systems course. "That class ended up having a great deal of meaning to me. I used that class in my early years as an engineer. . . . I still have the book," says Wilcox, who began his career with Northern States Power.

He adds, "I remember thinking that Junis was an exceptional teacher. He had expectations of the students that we would have the assignments read and the problems completed. He motivated me to do that. He certainly helped my interest because of his persona and his skill as a teacher."

### **Words that drove a career**

Wilcox also was motivated by a few words that Storry spoke to Wilcox's wife in front of Wilcox and his grandmother at the Order of Engineer ceremony following his 1976 graduation.

"He said, 'I expect big things from Jim.' I think of those words occasionally and it has been an important motivator in my career. I have plagiarized that phrase and used it with some people I have had of mentoring. I think it's one of the most powerful things you could have told to you, especially in front of your family," says Wilcox, who still chokes with emotion when telling the story.

Raman Unnikrishnan's career as an academic engineer was inspired by Storry.

Unnikrishnan '72 MS was a student at a top-notch engineering institute in India when the eminent electrical engineer Paul Anderson of Iowa State University visited. "I was a pretty good student and Dr. Anderson thought I should come to the U.S.

"I really had no plans to come to the U.S.," Unnikrishnan says. Anderson recommended Storry to Unnikrishnan.

He applied to SDSU and was granted a fellowship with the Center for Power System Studies, a division of the Electrical Engineering Department.

### **Building friendship, self-confidence**

Unnikrishnan, now the dean of engineering and Computer Science at California State University Fullerton, recalls, "I was doing well in my studies at SDSU. He felt I should go on to higher studies. Every once in a while he would come to my office and interact with me more than with other graduate students.

"This gave me tremendous self-confidence and a mentorship I would have otherwise lacked."

The single, international student on his first visit to America would go out to dinner with Storry and his wife, Laurel. At graduation, Storry gave Unnikrishnan a gold-plated tie clip.

"He did some things that went over and beyond what normally a professor would do, to make the memories a little more special," Unnikrishnan shares.

### **Life at the Storry household**

In the late 1940s, Storry accepted the role of adviser for the Lutheran Student Association. It was in that role that he met Laurel Helen Davis, a teacher who had returned to school for more training. He married the Lemmon area native on June 15, 1950. and they raised two children—David, who was trained as a civil engineer, and Cheryl Greenhagen, a systems engineer at EROS Data Center.

Cheryl recalls, "He was a man of great integrity and faith. He was also a kind, affectionate, and patient father. As we grew up, he encouraged us in our studies and extracurricular activities. He taught us to pursue our interests and our curiosity, and encouraged us to do our best in everything we did."

David, of Brookings, remembers that his father was active with the foreign student organization on campus and

that the family enjoyed having international graduate students visit their house.

There also is another engineer in the family; Junis' brother, Jerome, was selected as an SDSU Distinguished Engineer in 1980. Jerome, three years younger than his brother, died in 1979 after a thirty-four year career in food production engineering.

### **Conquering the challenge**

Junis Storry's career began with Westinghouse and included a stint with the U.S. Navy in Washington, D.C.

He was working as a machine designer for Reliance Electric in Cleveland when he got the telegram from Professor Gamble. Storry told the *Register* he enjoyed his work designing direct current motors and generators to be used in mills.

He viewed the opportunity to become an educator as "a challenge" and "decided to give it a try," he told the *Register*.

For students like Wayne Knabach and thousands of others, it was the right decision.

### **'The memory is so fond'**

"I remember him in class as being very sharp. He didn't work from notes. I don't remember him telling jokes or talking about the news. He was to the point; very professional. He was business like and prepared.

"Anybody you talk to will just admire him as an intelligent person. He had a brilliant mind, electrically and mathematically," Knabach says.

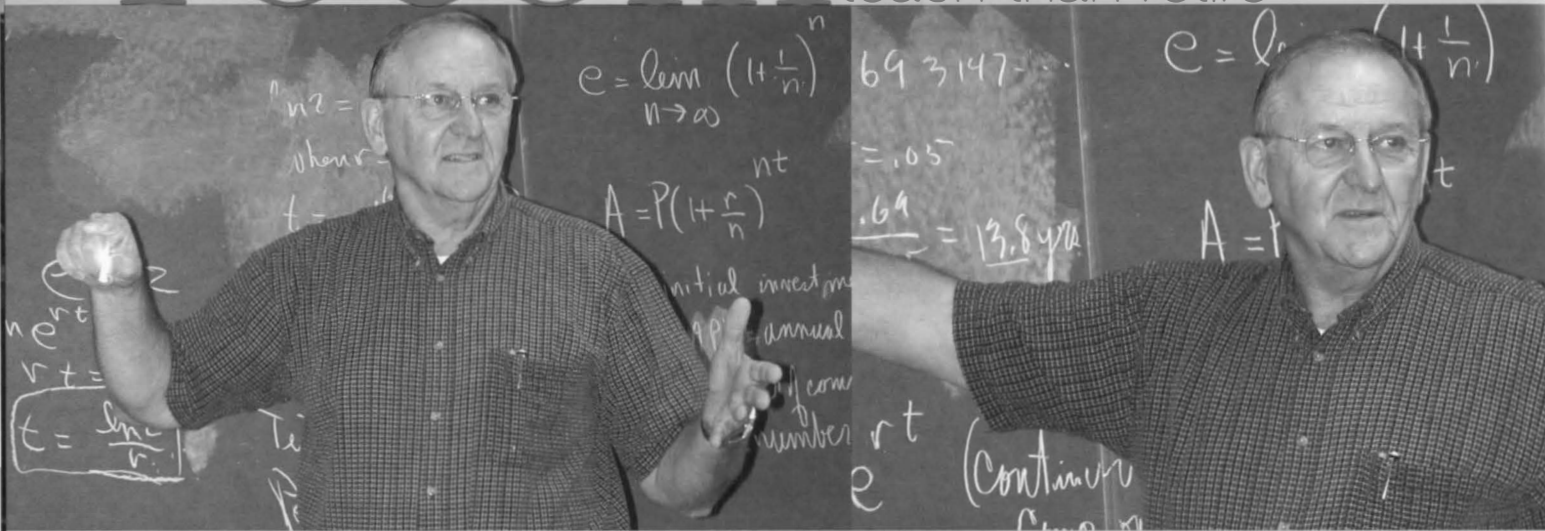
Greenhagen, now of Dell Rapids, says of her father, "I knew he was brilliant, but he also was very kind and affectionate. He'd sit us on his lap and read to us, get down on the floor and play with us. He was a very down-to-earth, wonderful person."

Unnikrishnan reflects, "People die, but the memory endures and the memory of Dr. Storry is so fond and so wonderful."

*Dave Graves*

# How does this add up?

## Yocom would rather teach than retire



At an age when many are calculating their senior citizen's discount at the coffee shop, Ken Yocom figures he would rather work full time explaining calculus formulas and differential equations.

Yocom, who turns 66 on September 2, has shed his duties as department head in order to be able to teach more.

The math professor served as department head from 1980 until July 1, when Associate Professor Kurt Cogswell took the job of acting head of the Department of Mathematics and Statistics. As department head, Yocom was teaching one to two classes per semester.

"I'm not ready to retire," says the father of three grown children. This year he will teach three to four classes per semester.

While Yocom is careful not to speak ill of the position he held for twenty-four years, he asserts, "The best part of the job is teaching and as department head you don't get to teach as much."

### Classmate of former dean

Yocom plans to take his new role "a year at a time," but the decision to buck

traditional retirement thinking doesn't surprise Duane Sander.

"I always felt that Ken enjoyed teaching and would be interested in continuing in that area. He enjoyed not only mathematical concepts but also teaching and presenting them to others," says Sander, who served as his dean from 1989 to 1999.

Sander, originally of Howard, also had some contact with Yocom, a Watertown High School grad, a few years earlier.

They were both members of the Class of 1960 at South Dakota School of Mines and Technology. "If we had a difficult math problem, we always asked Ken how to work it," recalls Sander, an electrical engineering graduate.

Yocom went to school to be an aeronautical engineer and tested the civil, electrical, and mechanical engineering programs at Tech. "I took a number of math classes and realized what I really loved is the math," the American Mathematical Society member says.

This was at the beginning of his junior year, when majors were required to make presentations to classmates.

"I found out I kind of like that." And he still does.

### Equal values: math, teaching

"A lot of people think math is dull and dreary. I just think it's wonderful. I love to show students how to solve problems," says Yocom, who is teaching a calculus class this summer.

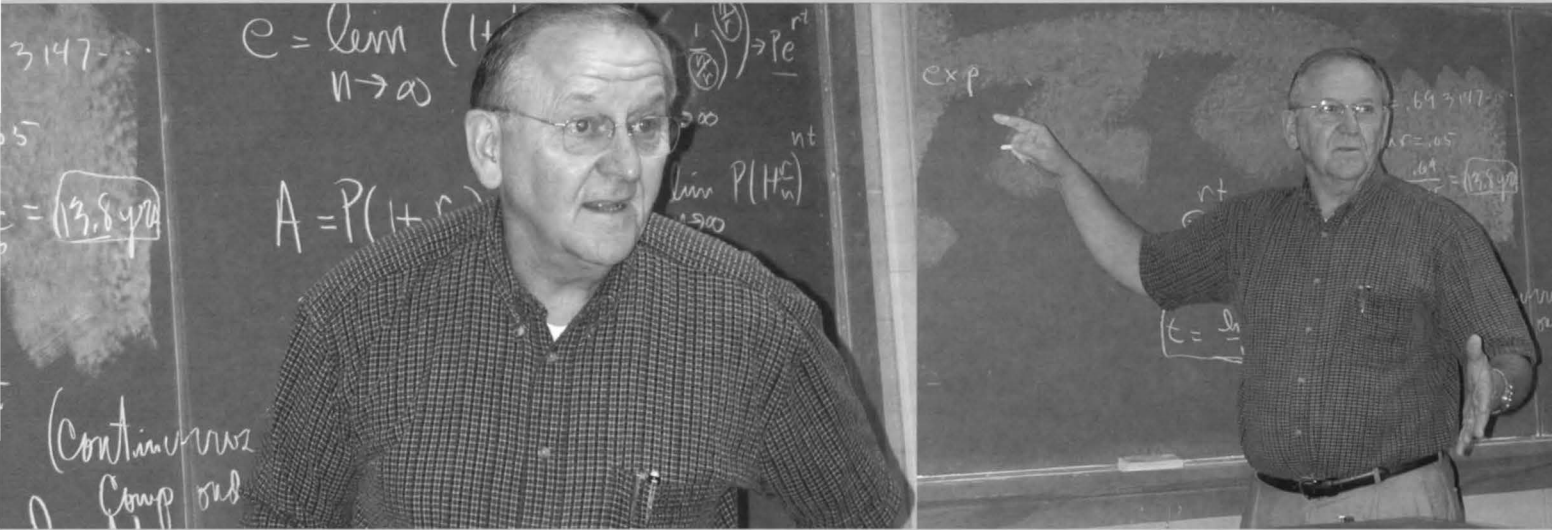
"He knows his stuff," says James Beatty, who is taking the 7:55 a.m. brain tester with nine other students in Crothers Engineering Hall. It is the electrical engineering student's first experience with Yocom. "I've enjoyed having him as a teacher.

"He will explain why it works. He clearly understands it. He explains it one way and then he explains it another way."

Sander, the former dean, recalls that Yocom's students "indicated he was a very good teacher and understood his subject very well. He made very difficult concepts easy through the use of

# Yocom – by the numbers

- 1 Number of spouses (Donna)
- 2 Number of years served as a science faculty fellow with the National Science Foundation.
- 3 Number of children (David, Douglas, Ellen)
- 4 Years taught at SDSU before taking his first fellowship (1962-66)
- 5 Number of papers he authored in his first four years at State.
- 6 Average number of advisees per year.
- 7 His favorite number.
- 8 One-third the number of years he served as department head.
- 9 Number of non-tenured faculty in the department.
- 10 Years between earning his master's and doctorate (1962-1972).
- 14 Number of graduate assistants in the department.
- 17 Number of tenured faculty members.
- 20 Number of graduate students in the department.
- 75 Number of undergraduate math majors.



examples and his ability to manipulate mathematical concepts.”

## Excited about solving problems

Beatty says that learning with Yocom is easier because of a common bond they share—the love of math.

Yocom’s enthusiasm keeps a class like calculus stimulating, the second-year student from Brookings says. Yocom loves teaching math and “he enjoys having the students understand it. He’s been doing it a lot of years, so he knows a lot of techniques.

“Clearly, he enjoys what he is doing. He gets excited. It’s kind of fun,” Beatty says.

Sometimes math lessons are a matter of solving for  $x$  or  $y$ . But Yocom says he also tries to build up student interest in math “by showing how powerful it is when you apply it to solve problems, like if an object is traveling in space you can calculate its velocity.

“I think students learn math through example problems and seeing how things work rather than keeping it

always at a theoretical level. Anytime I show them a theory, I always show them an example of how it works.”

## Don’t look for an easy A

While each new semester brings a freshness and Yocom prides himself in getting the subject across to students, “I’m not considered an easy grader.”

Yocom notes that when the late Tim Wittig was hired by the College to teach statistics, Wittig shared that the only B he received in math while in college came from a Yocom class. But Wittig added, “I got what I earned,” Yocom reports.

He estimates he has handed out grades to 6,000 students since he started teaching at State in 1962. His only departures from the classroom in the four decades that followed were two years spent as a science faculty fellow with the National Science Foundation and a year’s sabbatical to earn his doctorate. That degree, as well as his master’s, was earned at the University of Wyoming.

## A new program proposed

James Beatty and other young math lovers may be able to earn their doctorate in statistics here at SDSU. The College presented a proposal this spring to the South Dakota Board of Regents to develop the new program.

“There is no degree in statistics in South Dakota,” says Yocom, who hopes to know by fall if that will end.

Board of Regents’ approval doesn’t necessarily mean Yocom will extend his career to teach in that program. One equation that Yocom’s mathematical prowess hasn’t been able to solve is when the sectors dictating retirement will intersect.

Perhaps it is because you just can’t assign a value on how much Yocom loves to teach.

*Dave Graves*

Ken Yocom uses the old standard, chalk and a blackboard, to explain problems to a calculus class this summer before a test.

# Dennis Loban

*Loban built reputation for quality, precision*



Dennis Loban made a career out of building quality products in his shop in Solberg Hall Annex.

He also crafted a character that people quickly affirmed, whether they had known him for one month or for ten years.

"He had a demeanor about him that was professional but kind. He was very reserved, but in a professional way. I immediately liked him," says Teresa Hall, head of the Department of Engineering Technology and Management.

Loban, a lifetime Bruce area resident, served in that department (formerly General Engineering) for most of his twenty-five years as a fabrication technician within the College.

On October 5, 2003, the 65-year-old Loban died from cancer at the Brookings Hospital.

He left behind his wife, three sons and their wives, four grandsons, and a repute that surpassed even his most impressive shop work.

## **A perfectionist with a personality**

"I met him last August [2003], when it was a blistering hot summer day. I stood around and visited with him for a couple hours in that hot Solberg Annex," recalls Hall, who came to SDSU from Northern Iowa that summer.

"He was supposed to be off on medical leave as he had just been diagnosed with cancer. He had hired a couple of students to spruce up the shop and was here checking on it," Hall says.

"A lot of people didn't realize the wealth of talent we had in Denny Loban. Denny was a rare individual who had great skill, great patience and that ability to connect with you on a personal level.

Unfortunately, I only knew him for a month," the department head says in a voice flavored with the same kind of passion Loban would have exhibited during one of his well known story-swapping sessions.

Darrell DeBoer, who served as acting department head in 2002-03, adds, "He had a fantastic memory. Denny could always reminisce. I was always impressed with the details he remembered."

## **Motivated by making it work**

While Loban brought a lot of life to his stories, especially hunting adventures, they only tell part of his life story.

"He loved his job," declares Dorothy, his wife of forty-seven years. "He just loved it when the customer came in and didn't know what they needed, and he could come up with the product they needed. He liked the challenge of that.

"Sometimes he didn't sleep at night because he was thinking of how to design a project. Then the next day at work it would all come to him."

Among the projects he built were the water flume for Agricultural and Biosystems Engineering, a 3D fiberglass/plastic model of melting ice for a heat-transfer research study by a Mechanical Engineering student, and the architectural art for the main entrance to Crothers Engineering Hall.

"That department and his shop provided a lot of service to other departments on campus," DeBoer notes.

## **Tidy with a capital T**

Like his work, Loban's shop was meticulous. "A place for everything and everything in its place" describes his shop management philosophy, Hall notes.

Instructor Harvey Svec, who worked with Loban for ten years, says that Loban's Solberg Annex shop, officially known as the Research Laboratory, was kept neat with the equipment in good repair. "You could always find what you needed."

The fifteen- by thirty-foot room contained a mill, a couple turning lathes, his office, tool boxes, storage cabinets, a drill press, and rows of screwdrivers and wrenches hanging on a wall, arranged from smallest to largest, sorted by type.

DeBoer notes, "He had an excellent reputation as a machinist on campus. One of the reasons was that he had a well-equipped and maintained lab."

## **Teaching himself new tricks**

While Loban enjoyed the challenge of a major project, his first priority was setting up and maintaining the lab equipment for the students, Svec says. As the department purchased more modern equipment, Loban kept current.

For example, he learned how to operate these new CNC machine tools and maintain their mechanical and electrical systems.

Also, "He got a computer and a book that said DOS and taught himself to use the the computer," Svec says. "I don't know that he went to many classes. He

Dan Carey and Diane Schulte, senior mechanical engineering majors, receive instruction from Dennis Loban on the operation of a computer numerical center machining center. The metal-cutting machine was state-of-the-art equipment when this photo was taken for the winter 1997 *Impulse* issue. The photo also was used in the College's recruitment brochure.

was just always curious and willing to learn."

On top of that, Loban was patient and accommodating, Svec says.

"Just in my day to day dealings with him, he never got angry or upset when there were problems with a part or a machine. He would hang in there and try it again when something didn't work," the instructor recalls.

Loban's death, as a result of his second bout with cancer, "had an effect on the department. He was a great technical resource for SDSU," DeBoer says.

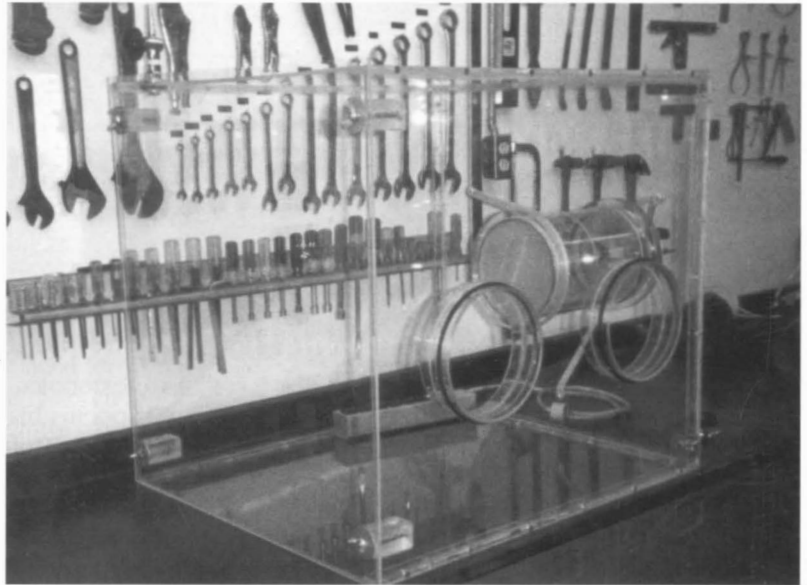
### Keeping the name alive

A scholarship effort by his wife will keep Loban's name connected with the Department of Engineering Technology and Management.

Using money received from memorials, Dorothy Loban started an acorn scholarship with the SDSU Foundation. She plans to make yearly contributions until it becomes endowed

at the \$10,000. In the meantime, she is providing annual funding for the \$500 scholarship.

The Dennis Loban Memorial Scholarship is to go to an entering freshman who graduated from Sioux Valley School District in Volga with first preference to students majoring in a program offered by the department in which Loban served.



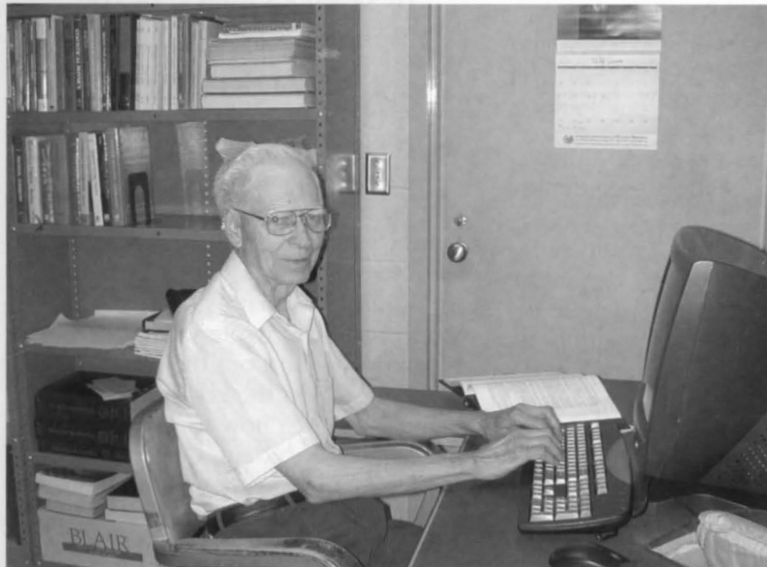
Organization was Dennis Loban's middle name, as the neat rows of tools in his shop will attest.

Scholarship applicants won't be required to demonstrate neatness or patience, but those with meticulous work habits are preferred.

*Dave Graves*

## Retired? Yeah, write

*Professor Emeritus Duffey authoring 10th book*



In the back of a physics laboratory, at a desk in a small office crowded to the ceiling with shelves of books and papers, sits a man who once sat in a meeting with Albert Einstein.

an article by Jonathan Tolstedt in the January 15, 1986, *Collegian*, Duffey met the famed scientist at a meeting of a group of eight people, including the mathematician John von Neumann.

"Actually, he sat right beside me," says 85-year-old retired SDSU physics professor George Duffey of the meeting held at the Institute for Advanced Research near Princeton (New Jersey) University.

According to

"We were working on a government research project on detonation waves," says Duffey, who was a graduate student at Princeton working on his thesis of the same subject.

Duffey says von Neumann chaired the meeting. "Von Neumann is one of the greatest mathematicians of the twentieth century," he says of the scientist, who contributed to the fields of computers and economics, in addition to physics.

"I was quite impressed by von Neumann," he adds. "[He] was a very good speaker."

Einstein was rather quiet at the meeting, even declining to comment when asked, Duffey recalls.

"He [Einstein] impressed me as being quite shy," he says. "He had very little to say at this meeting."

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# Retired? Yeah, Write

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The scientist appeared just as he is typically portrayed, Duffey remembers.

"His hair was uncombed, going in all directions. He wore rather sloppy clothes," he says. He adds that supposedly Einstein never wore socks because he would wear holes in the socks, but never replace them.

Duffey didn't say anything at the meeting, he recalls with a chuckle. However, such a meeting seems appropriate for a man who has contributed much to his field, both through his teaching and writing.

A new thirteen-chapter book will become the latest addition to the collection of ten books (including two translations and one reprinting) that Duffey has already authored.

Duffey grew up five miles from the town of Manchester in eastern Iowa. A love of science seems to run through his family, he says, as his brother became a weight engineer who worked for NASA. Duffey's son, James, earned a degree in physics as well.

In 1942, Duffey earned his undergraduate degree in chemistry and physics from Cornell College in Mount Vernon, Iowa. He went on to do graduate work at Princeton, where he received his doctorate in physical chemistry in 1945.

His new book, *Concepts of Modern Physics*, written for the junior/senior level, will most likely be used in a "widely taught" modern physics course that follows sophomore physics courses, he says.

He estimates that the book has been nearly twenty years in the making. Now, with a rough draft completed, Duffey will soon send his manuscript to Solomon Press, who he says will publish the book in cooperation with another printing company. Then, he says, the book will enter the design process.

Although Duffey doesn't know the exact date when publishing will be completed, the process will probably take at least another year.

## A desire to share his knowledge

In addition to textbooks, Duffey edited a collection of poems his great-great grandfather Nicholas Duffy wrote, *Poems from the 1830s by a Poor Son of Ireland: Nicholas Duffy*. He completed his first book *Physical Chemistry* in 1962 at age 41. In addition to books, several papers and numerous articles add to Duffey's writing resume.

Duffey's reasons for writing seem simple compared to the many physics concepts of which he writes.

"I always was interested in science. This [writing] is one way to use that knowledge," he says.

Duffey has specific reasons for completing his latest textbook as well. "I had some ideas that weren't very well expressed in the books that are available [and] I got encouragement from the publisher," he says.

Students aren't the only people who reap the benefits of Duffey's dedication to the written word.

"One of the things, I mean, it helps you organize your thoughts on a certain subject," Duffey says of writing. "You learn a lot. You know, one is never too old to learn."

His writing has given one of his former students a chance to continue learning as well.

James Mentele '64/'69 graduated from State with a bachelor's degree in mathematics and a master's degree in physics. He retired from a position as a senior information scientist at Dow Corning, and continues to work as a scientist emeritus for the company.

A member of the College of Engineering Advisory Council, Mentele says he visited with Duffey while in Brookings this April.

"On one of Dr. Duffey's earlier manuscripts, I worked the problems to help verify the answers," he says. "He had completed the manuscript and was asking about the best way to handle the illustrations with software. I said I'd be happy to look into it and

volunteered to attempt generation of the electronic images."

By working with Duffey, Mentele says he gets to preview the text. "He has introduced some recent developments in physics, and so it is an educational experience for me, too.

"He is a marvelous person of intense intellect," he adds.

## 'His work is his life'

Duffey's teaching career spanned forty-six years, with forty-five of those years spent at SDSU. Beginning in 1945, Duffey taught chemistry at State until 1958. He taught at the University of Mississippi from 1958 to 1959. He then returned to State to become professor of physics, a position he held until his 1991 retirement. During a sabbatical leave in 1977, he taught at the University of Western Australia.

"His work is his life," says Oren Quist, professor and head of the physics department. "He's just the kind of guy you enjoy having around."

He describes Duffey, an avid gardener, as an "extremely competent individual, very intelligent," as well as "always cheerful and working.

"I value his friendship," he adds. While he came to SDSU only a few years before Duffey retired, Quist says that he has spoken to several of Duffey's former graduate students, "and they all speak highly of him."

Quist adds that as soon as Duffey, who previously wrote using only a typewriter, found out the new things he could do on the computer, he wanted to learn how to use it. With the help of a student, Quist says Duffey learned his new computer skills within a year and a half.

And will Duffey be hitting the keys again soon? While he admits his plans include "nothing specific now," more writing may not be out of the question.

"There's always a possibility," he says.

Denise Watt



# MATHCOUNTS

gives new life to learning math

A popular store chain has been trying to expand its presence in California. They are planning to open forty stores in California in the next four to six years. If they were to open these stores over the next five years, a store would open every “x” days, on average. What is the value of “x” to the nearest whole number?

It’s a story problem that several so-called “mathletes” in South Dakota were willing to solve.

Reading, writing and arithmetic are still the three Rs vital to any classroom but MATHCOUNTS is breathing new life into the basics and gives new meaning to the traditional adding and subtracting.

The program, started in 1984, is a national math coaching and competition program that promotes middle school achievement through grassroots involvement. Students compete in written and oral matches. Similar to athletes, mathletes can compete at the school, chapter, state, and national levels.

It is supported by the National Society of Professional Engineers and corporations such as General Motors and 3M Foundation.

SDSU serves as a host site for chapter level competition.

G. Howard Nielsen, a SDSU professor of math and stats, is the volunteer coach for the Fellowship of Christian Home Educated Students.

“I got involved because I knew of some families in the community who had kids who were interested in getting involved,” says Nielsen. “I had a soft spot for home-schooled kids. . . . It hit me that MATHCOUNTS was a good program so I told the parents about it.”

Coach Nielsen’s passion for helping the home-schoolers paid off this year. The four-member team, which was sponsored by the Northeastern Chapter of the South Dakota Engineering Society, placed fifth in the chapter competition at SDSU in February and qualified one team member, Melissa Schram of rural Bruce, for state competition.

In March, at the state competition in Pierre, Schram and three other South Dakota mathletes qualified for national

competition and an expense-paid trip to Washington, D.C., in May.

At nationals, the South Dakota team placed forty-fourth out of fifty-seven teams, a big improvement from 2003, when the state team placed fifty-fifth.



*“I have learned how to outsmart problems. Instead of running into road blocks, I’ve learned how to think a problem through.”* Brett Werner, former “mathlete”

“It was a real thrill,” says Nielsen of this year’s ranking for the home-school team and Schram competing at the state and national levels. “It’s a thrill to see kids want to get in there and do it.”

But he notes, “The goal of MATHCOUNTS is not about winning. It’s about gaining an awareness of math at an earlier level. The kinds of problems the younger students work on are challenging to high schoolers, much less middle-school-aged students.

“We put a team together where physical ability has nothing to do with how well kids do, yet there are still trophies and ribbons given out.”

Schram, 14, says, “Trying to describe by experience with MATHCOUNTS in only a couple sentences is like trying to fit an elephant in a suitcase. MATHCOUNTS isn’t just math, it’s an adventure, a whole new world waiting to be explored.

“Chapter competition is fun and exciting as you battle for the top prize against kids you know. State gets a little more tense. When you are sitting in your chair alongside others who are intensely motivated to win, a certain competitiveness creeps over you that sends shivers up your spine.

“If you are privileged enough to make it into the top twelve, as I was, the countdown round gets very sticky. You know that if you miss a question, you may lose. Then, when the awards are handed out, your heart skips a beat when they announce your name.

“Nationals is simply beyond explanation. You go knowing you will probably not win, but you battle the tide to help your team. You go to compete, but you also go to have fun, sightseeing and exploring the city of Washington, D.C.”

Besides Nielsen, other SDSU instructors from the Math and Statistics Department also get involved.

Instructor Le Ann Werner, who serves as chapter competition co-coordinator along with professors Ross Kindermann and Tom Roe, says, “I mainly got involved because all four of my kids were in MATHCOUNTS. It’s a great program for the kids. They are able to see math in a way that they normally wouldn’t until college. They learn to see the connection that will help them later in life.”

Le Ann’s son, Brett, now a grad student at the University of Minnesota, says being involved with MATHCOUNTS has helped him in every day life situations.

“I have learned how to outsmart problems,” he says. “Instead of running into road blocks, I’ve learned how to think a problem through.”

Nielsen says SDSU’s involvement is good for future students.

“It’s a great recruitment tool for engineering,” he says. “It’s another way to have ties between the math and science teachers and the College of Engineering. It’s just another way to promote education.”

Greta Stewart

# Wind

## study sites expanding



Mike Ropp

*Thanks to a \$50,000 donation from a Florida company, the Wind Resource Assessment Network will expand to include at least six new towers, according to Michael Ropp, network director and professor of engineering at State. The three-year-old network currently consists of five towers in northeastern South Dakota. The new tower sites will be placed West River and in the southeastern quadrant.*

Wind is a fact of life in South Dakota. Hardly a day goes by when one doesn't feel a scorching, summer blast, a biting, winter wind or a gentle, refreshing breeze.

While almost all South Dakotans are aware of this seemingly ever present force of nature, not all may think of it as a valuable resource just waiting to be tapped.

Michael Ropp does. An assistant professor of electrical engineering at State, Ropp has dedicated the past few years to researching the potential of wind in South Dakota as an energy source.

As a result of a \$50,000 investment by FPL Energy, of Miami, Ropp will have a chance to expand wind research.

He serves as the director of the Wind Resource Assessment Network, or WRAN, project at SDSU. In December 2000, funding from the Department of Energy through its Wind Powering America program, coupled with funding from Governor's Office of Economic Development received in May 2001, made the new wind assessment project possible.

The purpose of the project is to study wind speeds at heights relevant to wind turbine heights, says Ropp. Instead of documenting wind speeds with anemometers placed at 10 meters, or 33 feet, a height commonly used by airports and the Department of Transportation, wind resource assessment data comes from heights of fifty, seventy-five and ninety meters (164, 230, and 295 feet, respectively), Ropp says.

"We're trying to help stimulate development of wind power in the state," he says of the network.

According to the Wind Resource Assessment Network website, a 1990s study by Pacific Northwest National Laboratories ranked South Dakota as fourth among the lower forty-eight states for wind power potential. The Natural Renewable Energy Laboratory recently developed detailed maps of the wind energy in South Dakota as well.

"Unfortunately, both of these studies had to rely heavily on computer-generated models and very sparse measured data, because very little appropriate measured data exists," notes Ropp. "The WRAN will provide valuable data that we anticipate will validate the

NREL maps, and perhaps suggest minor adjustments."

Currently, he says, the network consists of five towers in northeastern South Dakota at Leola, Crandall, Summit, Fort Thompson, and Crow Lake. Now, thanks to the funding from FPL Energy received in January, the network will receive at least six new towers, and a possible seventh.

"Florida Power and Light Energy wanted to make it clear that they are interested in investing in South Dakota," Ropp says. He calls the company "good corporate citizens" that is not just seeking a profit from the state, but wants to invest in the state itself.

According to Ropp, wind data may be measured using sixty-meter tilt-up towers, which are long, tubular structures. However, he says, besides being expensive (the installed costs of a tilt-up tower near \$16,000), ice build-up during the winters may cause problems with the towers and the equipment on them.

Thanks to the sponsorship of local electric cooperatives, however, the network doesn't have to rely solely on installing tilt-up towers, but rather on using existing microwave broadcast towers to gather data. While one fifty-meter tilt-up tower has been purchased through the alumnus donation and the South Dakota Experimental Program to Stimulate Competitive Research (EPSCoR), sponsorships make research possible at the majority of the network sites.

"All of the equipment money for the Wind Resource Assessment Network comes from the U.S. D.O.E. [United States Department of

Energy]. FPL Energy, [and] companies and communities willing to match funds, such as East River Electric [Power] Cooperative, West Central Electric Cooperative, and Miner County Community Revitalization [MCCR],” he says.

According to Ropp, the first of these sponsors, East River Electric Power Cooperative, donated both tower space on their towers and manpower to install the equipment the network uses. West Central Electric Cooperative has donated space on one of its towers and has provided matching funds for another tower.

The network will partner with another sponsor, South Dakota Public Broadcasting, in the near future as well.

### Reaching new heights

The original five tower sites were installed during November and December 2001.

“We tried to chose them [sites] within areas of major electrical transmission,” says Ropp. “We deliberately put towers where previous studies suggested that the winds were not favorable for power generation.”

Two towers, the Leola and Crandall towers, were ranked low by previous assessments, but have proven to be the two best sites of the original five, according to Ropp.

While all of the locations for the new network sites have not yet been determined, Ropp says that the strategy behind the placements will be to cover areas in addition to the northeast quadrant of the state. He names West River sites, such as Buffalo, Philip, Faith and Reliance, and

East River sites near Sioux Falls, Howard, and Lowry, as possible new sites.

Towers located West River often are taller due to the larger area which they must cover,

says Ropp.

The South Dakota Public Broadcasting tower at Faith, for example, reaches a height of 1,696 feet, or 517 meters.

Since professionals install all of the equipment, a new network site may be fully installed, operating, and transmitting data within one day, or even in a matter of a couple of hours, Ropp says.

### Providing an accurate picture of wind potential

The winter months may actually be the peak harvest time for wind energy in South Dakota.

According to Ropp, April, followed by January, February, and March, rank among South Dakota’s windiest months. The summer months show the least wind activity, before the winds pick up again in September, he says.

In the summer of 2001, however, winds reached their peak in June. This type of data may be misleading to developers, who often have to use relatively short data sets, says Ropp. For this reason, he says, a minimum of three years of data needs to be collected to form accurate representation of weather statistics. For companies looking to invest in South Dakota wind power, the Wind Resource Assessment Network provides a more reliable source of data and possibly helps prevent companies from making decisions based on misleading data.

“That’s the kind of risk that we can eliminate because we’ve been out there for a long time,” Ropp says.

Once developers decide to build, they do take certain risks. Ropp says that in addition to installing wind turbines themselves, which cost about \$1.5 million, companies must pay landowners for the use of their land.

In addition, he says that companies must secure transmission access, or a “farm to market road,” to transport the electricity

the turbines produce. Companies must determine a price for their electricity, and find a customer for their product.

### Far-reaching implications

The implications of the Wind Resource Assessment Network data not only

reach potential developers, but other professional fields including meteorology and homeland security.

For Ropp, a solar energy researcher, the wind project has allowed him to learn more about meteorology by working with state climatologist Dr. Dennis Today.

He mentions an added advantage of putting an engineering perspective to work on weather data—the capacity factor. The capacity factor allows a prediction of how much energy will be produced from one wind turbine, as a percentage of the absolute maximum that it could produce, Ropp says.

“What we’ve done is develop a simple procedure for computing [capacity factors] from the available data,” Ropp says. Thirty-three percent, he says, is generally considered a “good” capacity factor.

“All of our sites are that good or better,” Ropp observes, with the Leola site averaging over 50 percent.

### Serving South Dakota

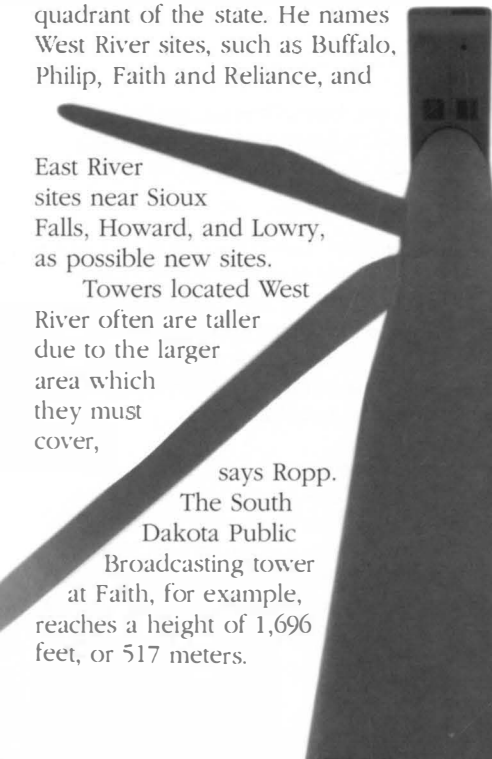
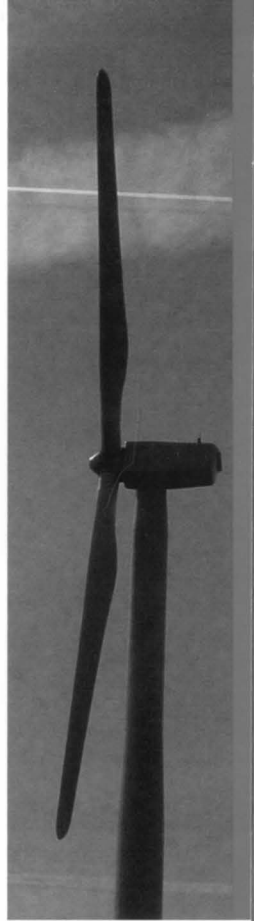
Ropp says that the Governor’s Office for Economic Development, which originally provided three years of funding for the project, will continue funding the network for at least three more years.

“Governor [Mike] Rounds has expressed his support for the project by continuing our personnel funding for a further three years,”

he says. “I feel Governor Rounds is very interested in doing what’s right for the state.”

Ropp credits former Public Utilities Commission chairperson and current commissioner Jim Burg for bringing the Wind Resource Assessment Network to

CONTINUED NEXT PAGE



For more information on the Wind Resource Assessment Network or how to become involved in its support, contact Michael Ropp at (605) 688-4664, or Michael.Ropp@sdstate.edu. Visit the Wind Resource Assessment Network website at <http://www.engineering.sdstate.edu/~wran>.

South Dakota—and to SDSU. “He was the guy who recognized the opportunity and set the wheels in motion,” he says.

According to Ropp, Burg was informed that funding for the program was available and that the new program had to be run by a state entity.

A home for the network at SDSU seemed like a natural fit. “It’s definitely part of our land-grant mission,” Ropp says.

A common thread of service to the people of South Dakota runs throughout the project, as data collected is made available to everyone.

“Anybody who wants it [data] can have it,” Ropp says, compared to private companies who keep their wind data confidential as it is often used by the companies themselves to compete against other companies.

### Looking towards the future

While Ropp classifies the Wind Resource Assessment Network as a “speculative venture,” his “build it

and they will come’ attitude has proven true thus far.

He estimates there are at least a half-dozen developers interested in the state.

And, he says, he knows of developers who have changed their plans according to data provided by the Wind Resource Assessment Network.

Recently, Ropp says, the network took part in a study along with Superior Renewable Energy LLC, a Texas company, to test the accuracy of the data gathered by the network. The results showed that the network data is quite accurate, according to Ropp.

Although successful, the network faces challenges in its operation.

“We are always on a shoestring budget,” says Ropp. Currently, the program employs one undergraduate student, sophomore electrical engineering major Kayla Flynn of Brookings, to help Ropp with the data. And with the expanding number of sites, Ropp hopes to one day hire a full-time technician to work with the

program—a goal that may be possible with alumni support.

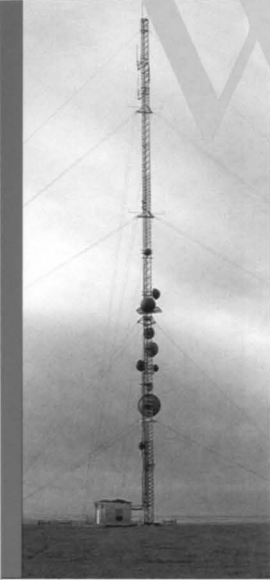
The lack of money becomes a problem when an immediate need arises, such as when equipment breaks. When this occurs, Ropp says he must try to find funding on a short notice.

Already, the network’s success has passed Ropp’s initial expectations. He says he would like to see as many new network sites installed as possible.

“We’re limited by the number of suitable towers in the state,” he says, which number somewhere between twenty-five and thirty.

While Ropp says that wind power may not lead to huge economic growth, he says the potential exists for “very real economic development. I would really love to see South Dakotans rise up and get involved.”

*Denise Watt*



The Crandall microwave tower, with instruments installed to collect wind data. The Crandall site is located on top of a ridge of the “Coteau des Prairies,” according to Ropp. “The Crandall ridge runs north-south and is comprised of many tightly-spaced, low hills that rise forty meters above the surrounding plains.”

## FACULTY NEWS

Associate Professor Kurt Cogswell took the job of acting head of the Department of Mathematics and Statistics on July 1. He replaces Professor Kenneth Yocom, who is returning to the classroom fulltime. (See separate story on Yocom.)

MaryJo Benton Lee, diversity coordinator for the College, has had three articles accepted for publication in refereed journals this past year. “Ethnicity, Language and School Success in China” appeared in the September 2003 issue of *China Education Forum*. “Planning for Success: How to Prepare for Fieldwork Abroad” was published in the December 2003 *Great Plains Sociologist*. A third article, “Macro and Micro Factors in Ethnic Identity Construction and Educational Outcomes: Minority University Students in the People’s Republic of China,” co-authored with Diane Kayongo-Male of the Sociology Department, will appear in an upcoming issue of *Race, Ethnicity and Education*. Lee is a clinical sociologist whose research interests center around issues relating to race and ethnicity, educational attainment, and Asian studies.

Beverly E. Lundberg, associate professor emeritus of Electrical Engineering and associate professor emeritus of Computer Science, died February 23, 2004, at the Milbank Area Hospital. Lundberg, 74, of Strandburg, received his bachelor’s and master’s degrees (’57/’63) from SDSU and taught here from

1961 to 1992. His survivors include his wife, Marsha, one son and five daughters. The couple moved from rural Estelline to rural Strandburg in fall 1997. His funeral was Saturday, February 28, 2004, in LaBolt at the LaBolt Covenant Church.

Assistant Dean Rich Reid has been promoted from major to lieutenant colonel in the South Dakota Air National Guard. He is a member of the 114th Civil Engineering Squadron in Sioux Falls. Also, at this spring’s Distinguished Engineer Banquet, the associate professor of Civil and Environmental Engineering was selected as the College’s Outstanding Academic Adviser of the Year. Reid is known for taking great personal interest in students, and for being an adviser who goes the extra mile for a student in need.

Timothy A. Wittig, associate professor in Mathematics and Statistics, died September 15, 2003, at his Brookings home after a battle with cancer. Wittig, 49, grew up in Wayne, Nebraska, graduating from Wayne High School in 1972. He received his bachelor degrees in mathematics and physics from SDSU in 1976 and a master’s degree in statistics in 1978. In 1981, at age 26, he became the youngest person to receive a doctorate from Michigan State University’s stat department. He began teaching at SDSU in 1997. Survivors include his wife, Deborah, two step-daughters, and his parents.

# Hengeveld, Twedt

*drafting state's first  
energy code*



Mechanical engineers Derek Hengeveld, left, and Mike Twedt

## Energy efficiency.

It's a term that catches people's attention, especially in the age of high-energy costs.

Thanks to the work of mechanical engineering instructors Derek Hengeveld and Mike Twedt, South Dakota will become better educated about energy efficiency.

The U.S. Department of Energy awarded a \$125,000 grant to the South Dakota Governor's Office of Economic Development. In turn, the money was funneled to Hengeveld and Twedt to research, evaluate, and promote a building energy code.

They made history, too, because it is South Dakota's first state energy program grant, meaning the first study that takes a serious look at developing an energy code for the state.

The grant is available to all states, but South Dakota had never pursued it before until Hengeveld and Twedt teamed with the Governor's Office of Economic Development to write a proposal for the project, which was approved by the Department of Energy.

Hengeveld and Twedt have been deeply involved with the energy efficiency program within the Department of Mechanical Engineering. Besides teaching energy-related courses, they also coordinate the Energy Analysis Laboratory.

Located in Crothers Engineering Hall, the lab researches ways that facilities can save on their energy costs, focusing on electricity, natural gas, propane, fuel oil, and even wood. They also study thermal, mechanical and electrical equipment, and systems.

## Meeting federal request

The impetus for their grant proposal was the Energy Policy Act, enacted by Congress in 1992. It said the country had

to increase its efforts in energy efficiency, and by 2004 all states

must have an official energy code in place that declares required minimums for new commercial buildings and remodeling projects.

Since receiving the grant October 2003, Hengeveld and Twedt have been researching codes in other states and existing ones in South Dakota.

Most other state legislatures have implemented ASHRAE standard 90.1, 1999 as their official code.

Standing for American Society of Heating, Refrigeration, and Air Conditioning Engineers, it's an independent organization that develops and publishes standards.

A proven and reliable commodity in many construction venues, Hengeveld and Twedt decided to use ASHRAE 90.1 and promote it as South Dakota's energy code, making modifications as needed.

Hengeveld emphasizes incorporating the 1999 version of ASHRAE is realistic since it contains minimum standards that users find easy to follow.

"It's important getting a code in that people will be receptive to," he says. "ASHRAE 90.1, 2004 will soon be available, but it has very strict requirements that would be hard to meet at first. We thought for the first step, why not just put in the bare minimum and try to get people to buy into this."

They are currently applying ASHRAE standards to a cross-section of buildings in the state. For example, determining if correct amounts of insulation are being used for a specific building size or the right efficiency rating for a heating and cooling source.

*"We want to evaluate the cost and return on the investment to see which direction would yield the best savings for South Dakota."* Mike Twedt

"If we make any improvements to ASHRAE 90.1, it would cost more to put a better code out," says Twedt. "We want to evaluate the cost and return to see which direction would yield the best savings for South Dakota."

## Most adhering to standards

They are pleased that many engineers have been using ASHRAE as a guideline for their construction purposes

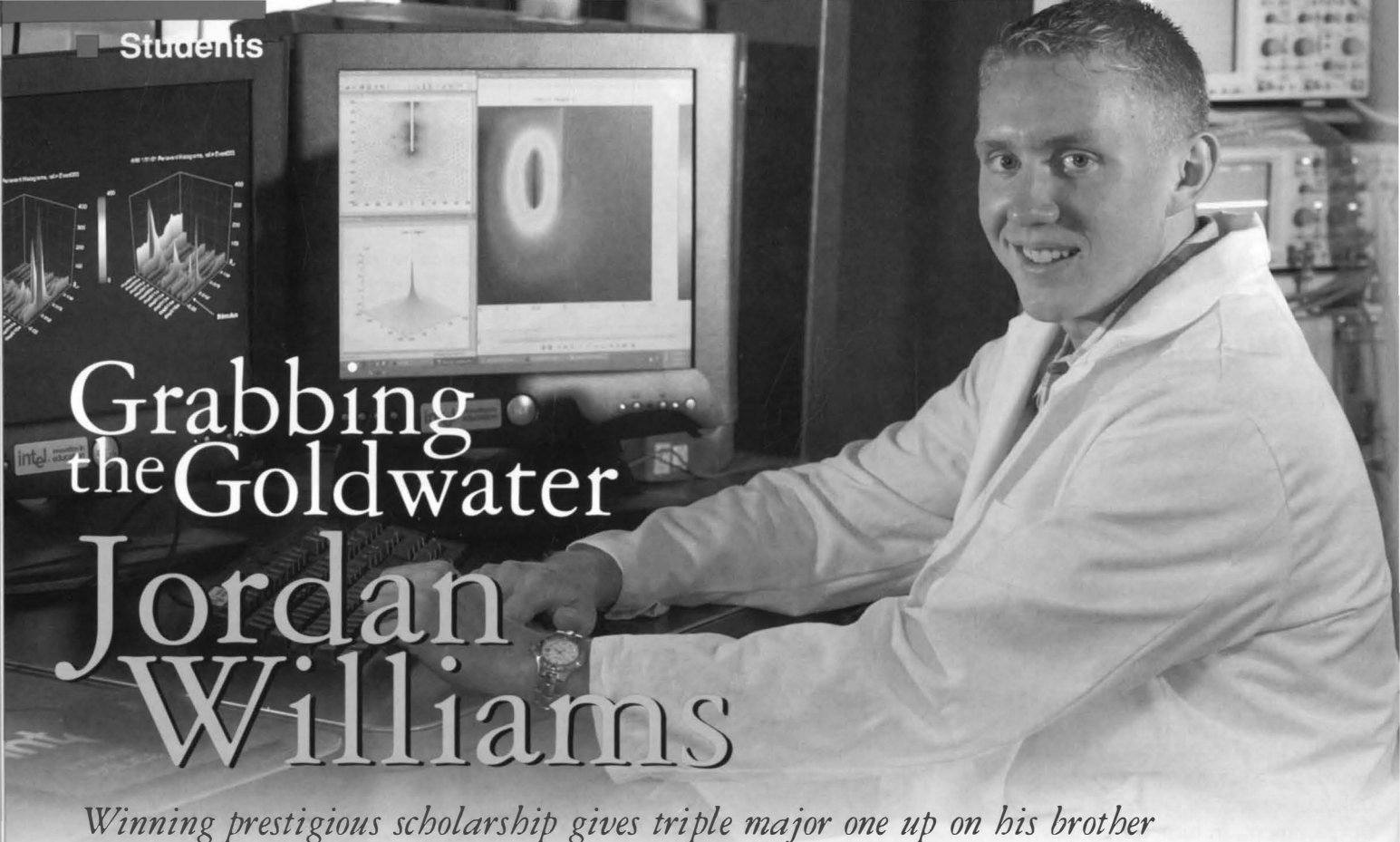
"We recently analyzed a new South Dakota high school that is being constructed and it already exceeds the criteria set by ASHRAE," says Hengeveld.

"Most of this is common sense," notes Twedt. "Most of what we are talking about is being done to some degree, so this is not a huge change. This is just a matter of unifying everything so that all buildings get the same energy treatment."

Hengeveld and Twedt point out that since the federal government has mandated that all states have a commercial building energy code that meets or exceeds the ASHRAE code, their next step is the promotional phase, which begins around October 2004.

"Once we finalize and submit our final report to the state, we will be scheduling workshops around the state," says Twedt. "We will be doing outreach, telling groups like engineering societies, architects, builders, and owners about the code and how to use it."

*Kyle Johnson*



# Grabbing the Goldwater Jordan Williams

*Winning prestigious scholarship gives triple major one up on his brother*

Jordan Williams isn't a once in a lifetime kid, but he may be a once in the decade type of student.

This spring the fourth-year engineering physics, electrical engineering, and pre-med major from Dell Rapids was awarded the Barry M. Goldwater Scholarship for the 2004-05 academic year. He is one of 310 winners nationwide and the only one from South Dakota this year. It is the first for SDSU since 1994.

The scholarship, which provides up to \$7,500 a year for tuition, fees, books and room and board, is given to a student who has chosen a field of study that includes a career in math, natural science or engineering. The winners must maintain a "B" average, be ranked in the upper fourth of their class and be U.S. citizens.

Oren Quist, head of the Physics Department, said Williams, with a 4.0 GPA and ranking first in his physics classes, was a natural choice for this year's nominations.

"He's very intelligent, thorough and is always trying for understanding," Quist says. "His questions are pointed and direct. Jordan is quiet and unassuming. I'm happy for him."

## Family influences

Williams, a 2000 graduate of Dell Rapids High School and the son of Gary and Darlys Williams, grew up with an older brother and sister in a close-knit family where success was the standard.

His brother, Justin '95/'96, is featured in SDSU's *You can go anywhere from here* television advertising campaign. He works in biomedical research, specializing in neurological systems at the University of Wisconsin. His research involves creating microchip implants that restore muscle control and quality of life to people living with Parkinson's disease, spinal cord injury and amyotrophic lateral sclerosis (Lou Gehrig's disease).

"As a parent, I have always encouraged my children to excel academically and strive to obtain a great education," Darlys Williams says. "I have tried to inspire a thirst for learning and knowledge. Therefore, Jordan's scholarship award is a dream come true for me."

Williams' sister, Kristi, is a head civil engineer. In fact, Kristi, eleven years older, might be the one person who first got him interested in engineering. "My sister used to let me help her survey as

well as watch the concrete canoe races when she was a civil engineering student at SDSU," he recalls.

Jordan Williams' initial collegiate interest was electrical engineering.

"I grew up at the time when computers were just starting to become really popular, so I've always been interested in the latest computer and electronic technologies," Williams says. His interests, however, went way beyond his expectations.

## Just like Justin?

"My brother encouraged me to take on engineering physics because it would be a good compliment to any branch of engineering that I might study," he says. "Then I recently added pre-medicine courses to my schedule because of my research experiences in biomedical engineering with my brother over the past few summers. Plus, Mom really wanted a doctor in the family.

"My brother has been a major contributor to how I've progressed in my academic career. Of course, there has always been some healthy competition between us, both in and out of the academic arena, which has really pushed me to strive for higher goals."

This summer, for the third straight year, Jordan is working with his brother as a research assistant in Justin's biomedical engineering efforts.

"Jordan and Justin have quite a unique, brotherly relationship," their mother says. "They sometimes talk about things related to brain research, which most people don't understand at all. They are just as likely to discuss Barry Bonds and his home run record, or the latest golfer to win the Masters. They enjoy running for miles together in all kinds of weather."

Not only does Williams have a close bond with his siblings, he has a strong relationship with his parents as well.

"My parents have also always been my biggest supporters and they've provided a tremendous amount of encouragement in everything I do," he says. "My parents have always stressed the importance of education. To them, focusing on my schoolwork would pay off more in the long run than holding a part-time job during the school year to earn a little extra spending cash."

### Outside of academics

Williams also looks up to another SDSU grad.

"I used to watch a lot of SDSU basketball games when my brother went to school here and he was a good friend of one of the forwards, Jason Schuetz," he notes. "Jason was just such an

incredible athlete on the floor and he was always a crowd favorite with his trademark clunks and his easy rapport with the crowd, so I've always kind of looked up to Jason since then. To this day, Jason is still one of the kindest and most personable individuals I have ever met."

Williams' success goes beyond the classroom to the athletic arena and the entertainment stage.

The SDSU track team member used to train for the decathlon, but after taking twenty-one credits fall semester and nineteen credits spring semester, he switched his focus to sprinting and throwing the javelin.

Williams also sings baritone in the Concert Choir, with which he has traveled to other parts of the world. During spring break 2003, the group toured France, Belgium and the Netherlands.

In addition to the choir, Williams also sings special music for local churches and was even asked to sing the national anthem at the opening of the state baseball tournament a couple of years ago.

### The challenge of multi disciplines

Mother is also proud of her son's ability to juggle a more-than-full load.

"Last semester he took twenty-one credits, including rigorous courses,

participated in concert choir and track, and maintained his 4.0 GPA," she adds.

Balancing such diverse subjects can prove a challenge.

"Switching back and forth between engineering classes and the life sciences has been a little taxing at times because they require different mindsets," Williams said. "My engineering classes usually rely on design, analysis, and problem-solving skills while much of the subject matter in biology and chemistry seem to focus on memorization.

"It has been a little difficult studying such different subjects at the same time, but it's nice when I get a chance to apply what I've learned from one class to another."

### Life after State

Williams plans to pursue a higher degree after earning his three degrees at SDSU in May 2005.

"I want to go to the University of Wisconsin and get started on the MD/PhD program, which will take about six or seven years to finish," he says.

Not one to boast, even about winning the prestigious Goldwater award, Williams just grins and says, "It's a good feeling and it's pretty exciting."

*Greta Stewart*

## SOCIETY OF PHYSICS STUDENTS

### Phirst-graders phind physics phun

The SDSU Society of Physics Students won a \$300 Marsh W. White Award for its elementary education outreach program proposal, "Phundamentally Physics." Through "Phundamentally Physics," students in the chapter worked with first-graders from Medary Elementary School in Brookings throughout the school year, using hands-on lessons to teach about physics concepts.

The society received entry forms for the competition early last fall. Society President Ryan Siebrasse and Vice President Sara Landau drafted the award proposal.

"I think this is an excellent indication of what good students can do when you let them," says Oren Quist, society advisor, professor and department head. "It's nice to have this recognition that we are actually doing something worthwhile," says Landau, a junior physics and engineering major from Brookings. "It's definitely a boost in morale [for the organization]."

According to Landau, getting younger students excited about physics is easier because they don't yet

have negative connotations associated with that particular branch of science.

"They [the students] are very excited to see us," says Landau. She said that the students enjoy the physics lessons and seem to retain the information well.

One of the lessons used objects such as marshmallows to explain the concepts of atoms and density.

"Sharing my love for physics and their passion about life is a great combination," says Siebrasse, a senior physics, communications studies and theatre and secondary education major from Aberdeen.

The chapter had fifteen students representing thirty majors during the past school year.

Marsh W. White Awards are made to chapters to support projects designed to promote interest in physics among students and the general public.

*Denise Watt*



First row, from left, John Madrid, Ryan Siebrasse, and Brandon Breitling. Second row, Nathan McClanahan, Sara Landau, Katherine Brandtjen, James Galipeau, and Jacob Plovanic.

# ASCE wins Ridgway!



## Engineering students hit home run with prestigious award

They say the Ridgway Award is comparable to the World Series of Engineering.

And engineering students at SDSU have hit another home run—the second time in the past five years.

The American Society of Civil Engineers (ASCE) Student Chapter has been selected as the recipient of the 2004 Robert Ridgway Student Chapter Award.

“It’s a great honor for the campus and the Engineering College to be named the most outstanding chapter in the nation,” says Dean Lewis Brown. “Our ASCE students, under the leadership of Associate Professor Chuck Tiltrum, continue to prove that they really are the best in the country and I couldn’t be more proud of them. They continue to bring tremendous distinction upon our Civil and Environmental Engineering Department.”

Tiltrum also is more than happy to brag about his ASCE students.

“We were up against the big schools in the nation and we won,” he beams. “We were up against schools like Stanford and MIT and we did it.”

Students must submit a report, filled with the things they accomplished during the year. Some of their main objectives include fund-raisers and community service. A national committee then judges the report.

Tiltrum says he and fifteen to twenty students will be in Baltimore for the October 23 awards presentation.

### Best part of the job

Tiltrum has been the student chapter advisor for the past twenty-two years. He is also one of twenty-one national ASCE board members. He says during the school year he spends between eight and ten hours a week with the ASCE

student chapter, but stresses he didn’t win the award; the students did.

“I can help smooth over the rough spots and answer their questions,” he says. “I can provide the knowledge, but I don’t run the ASCE student chapter. The officers are the ones who do that. We have great people here. I just suggest some goals and they offered a lot of support.”

“This is the best part of my job,” Tiltrum continues. “Seeing the kids achieve their goal is something any advisor would be proud of.”

“They spent a lot of hours doing community service and with [vice president] DJ Buthe making this report,” Tiltrum says. “They worked hard and our hard work paid off. What you get out of it is what you put into it. We are so lucky to have such a great group of students.”

### Community service, guest speakers a key

ASCE student chapter president Carrie Buthe, a senior from Sioux Falls, along with eight officers who guided the chapter, says she was really excited when Tiltrum called her in early June to tell her the chapter had won.

“It’s something we shoot for every year since they won in 1999, and we did it. It’s a great feeling,” she says enthusiastically.

In addition, ASCE earned the vice president’s award as the most outstanding student chapter in Zone III for four consecutive years (2000-04).



ASCE is a national organization with more than 130,000 members. The organization has several objectives, one of which is to increase awareness of what civil engineers do in the field.

Part of that awareness is focusing on making sure engineering students understand what life in the real world will be like.

“We bring in several speakers at our bi-monthly meetings,” Tiltrum says. “We want to get the word out and let them know what they’ll encounter in the field.”

Along with speakers, students also put a big emphasis on community service. For the second year in a row, the South Dakota Board of Regents honored ASCE with the campus award for community service when the met here in March. (See separate story.)

In addition to president Carrie Buthe and her husband and vice president DJ Buthe, the other chapter officers are brothers senior Justin Petersen, recording secretary, and junior Jason Petersen, correspondent secretary, both of De Smet; senior Monica Anderson, community service coordinator, Blooming Prairie, Minnesota; senior Kurt Kesteloot, treasurer, Marshall, Minnesota; senior Joe Chilson, recruiting chair, Sisseton; and sophomore Nicole Tomaszewski, underclassman representative, Circle Pines, Minnesota.

Greta Stewart



# ASCE

## Community Service

### *ASCE projects impress Board of Regents*

The railroad bridge overpass on Sixth Avenue and the Children's First Step Learning Center are the latest Brookings locations to receive the ASCE treatment.

With a fresh coat of paint, they are prime examples of community outreach courtesy of the American Society of Civil Engineers.

For the second straight year, the State Board of Regents honored ASCE by presenting the chapter in March with the campus award for community service.

One of the major initiatives of ASCE is to increase awareness of what civil engineers do. To that end, five goals have been developed to improve the chapter's community service efforts:

- Concentrate on the youth by introducing the civil engineering profession at an early age.
- Generate excitement in high school students about the profession so they develop an interest in civil engineering and ASCE.
- Introduce college students to the role of a professional within the society by creating a partnership with the community.
- Focus on the importance of community service to the members of the student chapter through enjoyable community service projects.
- Maintain camaraderie and communication with peers and competitors through organized events and professional activities.

### **Chapter activities**

The student chapter participated in twenty community-related events in 2003, including a Brookings bridge with a history of having a graffiti problem.

"I'm writing on behalf of the city of Brookings to thank you and your organization for your community service," says former City Manager Michael Williams in a letter to ASCE President Carrie Buthe. "The painting of the railroad overpass was a great public service noticed by many in the community. Brookings is a more beautiful community because of your service."

Besides painting the bridge and the learning center, ASCE participated in Habitat for Humanity by pouring concrete and helping prepare the inside of the house for finishing.

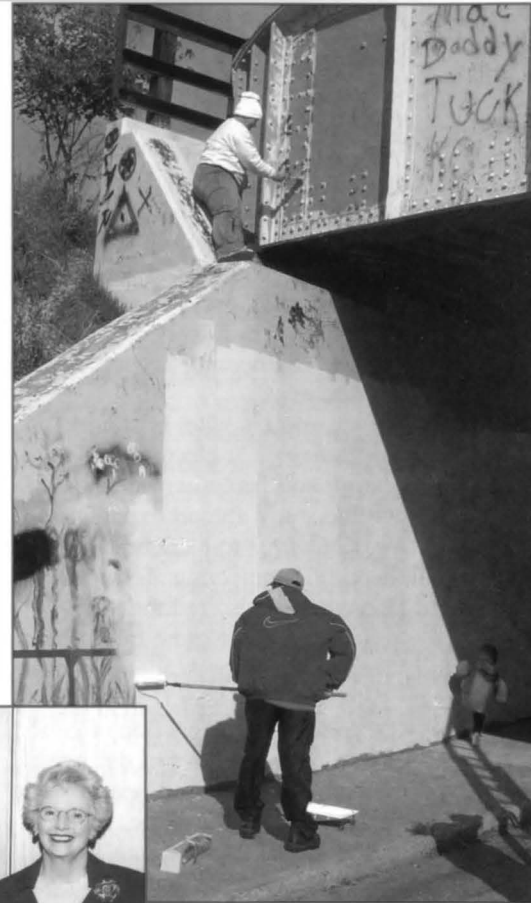
The chapter hosted a poster contest for fifth-graders, and promoted



engineering to high school students through the Engineering Expo.

The students held a blood drive, and hosted the third annual trick or treat for canned goods, donating them to the Brookings Area Food Pantry. They sponsored the 4-H Engineering Award and used chapter funds to buy angel tree gifts for needy children in the area.

Members also served as crossing guards during the Hobo Day road race, and they volunteered as bell ringers for the Salvation Army during the Christmas season.



### **Leadership commitment**

"The chapter's overall success is due to the commitment of our officers," says Buthe of a chapter that has also

received the Regents' academic excellence award and the organization award in past years.

"We've had good continuity and carryover of officers over the last several years," says Associate Professor Chuck Tiltrum, who has been named Outstanding Student Chapter Faculty Advisor of the Year for Zone III on three occasions. "Getting our officers involved at a younger age, and letting them hold offices for a couple of years, has made a big difference."

*Kyle Johnson*

# Tracing roots

*Students study origin of their engineering trade*

What better place to understand the heritage of their profession than the cradle of the Industrial Revolution.

That's just what seven students and three faculty members did when they ventured to Manchester, England, during spring break March 5-14.

"Students need to see where we have come from in order to see where we are going," says Harvey Svec, instructor in Engineering Technology and Management.

Harvey and his wife, Harriet, assistant professor in electrical engineering and computer science, planned the study abroad experience after previous trips to Manchester. Teresa Hall, head of Engineering, Technology, and Management also led the group.

In-house support came from Provost and Vice President for Academic Affairs Carol Peterson and Dean Lewis Brown.

"Engineering students don't like to miss classes so we felt a trip during spring break would be the best possible time to go," says Harriet Svec. "We would like to make this trip an annual experience for students in our college. It's a financially reasonable approach to enhancing their engineering education."

The students were junior Jason Heinemann, Brookings; senior Kathy McMahon, Elkton; senior Erik Case, Brandon; junior Dan McMahon, Elkton; senior Katrina Lentz, Sioux Falls; senior Byron Davis, Brookings; and graduate student Peter McMahon, Elkton.

"This trip was a great opportunity to expand my cultural horizons and broaden my education experience," observes Heinemann, a mechanical engineering major. "I have always been interested in history and fascinated by how well some things were designed in the past given the resources available."

Dean Brown says students "will view America differently as a result of their visit. Since they are engineering majors, the trip offered them the chance to see some of the historic roots of their own future professions."



**Above:** Pictured outside of Royal Doulton, an historic china manufacturing firm in Manchester, are, from left, Teresa Hall, head of the Department of Engineering, Technology and Management; instructor Harvey Svec, Peter McMahon, Byron Davis, Jason Heinemann, Kathy McMahon, Katrina Lentz, Eric Case, and Dan McMahon. Not pictured is Assistant Professor Harriet Svec (photographer). **Right:** Spools of cotton that will be twisted, stretched and made into yarn.

## Seeing the sites

Because the Manchester area was the center of the cotton textiles industry during the Industrial Revolution, the students visited two museums dedicated to the textiles industry.

The city and surrounding sites, steeped in the history of the textile industry, are renovating and using the old textile warehouses, spinning, and weaving buildings for present-day offices and housing.

A glimpse inside the Apprentice House at Quarry Mill took the group back to where children who worked in the mills were housed.

"I think the extent of child labor during the early 1800s in the textile industry was one of the most profound realizations for our students," says Harriet Svec.

Peter McMahon, who is researching the history of the textile manufacturing industry, adds: "The sites really helped me to understand not only the manufacturing processes, but it also gave me a time line of the social issues and culture of Victorian Britain."

At the Museum of Science and Industry, the group viewed an underground restoration of a sewage system showing the progression and development of waste treatment in Manchester, complete with sounds and smells.

"Seeing that gave me a good historical perspective of what we have studied in my courses," points out Kathy McMahon, a civil and environmental engineering major.

"I really appreciated the steam engine exhibit in the museum," notes Heinemann. "These large steam engines

were used to power all the machines in a textile mill. I appreciated the concepts I learned studying thermodynamics after seeing these machines running and being able to understand what was happening during the process."

### Historic canals, china

Manchester canals were part of a large canal system developed for transporting raw materials and finished goods prior to the railroad system.

Martin Whalley, a professor at Manchester Metropolitan University who has also been an exchange professor at SDSU, took the students on a walking tour of the canals. He discussed his twenty-five years of participating in the restoration of the canal system and he helped the students understand the changes England has seen in transportation, says Harriet Svec.

For engineering, technology, and management students, the Royal Doulton Company was an eye-opener into a first-class world of luxury ceramic tableware, giftware, and collectables. The company is also one of the oldest and best-recognized manufacturers of china, and seeing the age-old process and existing china that has survived through the decades, was education in itself.

Seeing the production method enhanced the understanding of the historical aspects of the manufacturing processes, according to Lentz, although she did offer some engineering advice. "I identified a number of areas where Royal Doulton could make improvements in the layout of their factory," she says.

Says Hall, "A big factor in nineteenth century building design and work flow through the factory was that labor was very inexpensive. It's good to see that the students picked up on the work flow inefficiencies that Royal Doulton still needs to address."

### Museums, mines

York, England, and the Yorkminster Cathedral, where excavation under the cathedral has revealed original Roman footings and friezes under the present structure, was a highlight for the civil engineering students.

"Although the cathedral is used daily by the parishioners, there are tours describing the historical changes and structurally significant aspects of the old

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*"Students need to see where we have come from in order to see where we are going."* Harvey Svec

---

building," says Harriet Svec. "York is one of the old walled cities with charming historical streets and structures."

Touring Telford, England, in the Coalbrooke area, students went across the first iron-bridge and they visited museums that depicted the changes in the iron industry from the first coke-smelting furnace. "The area had a tremendous influence on the iron industry," indicates Harriet Svec.

Even given a day off to shop or rest didn't stop the students from exploring, according to Svec, who relates that some decided to visit a lead mine in Castleton on their free day.

"In the end, we all went," she says. "We took a train, a bus, walked a number of miles, and rode in a small boat on a canal into the mine. We were in rain, sleet, snow, and a cozy, dark lead mine in the peak district. We were very proud of our students for taking the initiative to investigate yet another historical site."

### An engineering team

The students were required to make a class presentation and write a paper to earn a credit for the trip. The study also called for all students, without regard to major, to visit all the sites.

"When we planned the trip, we thought an interdisciplinary approach would be good for team building and

giving the students an opportunity to learn from each other," reports Svec.

In Manchester, they visited with electrical engineering faculty at Manchester Metropolitan University, which has an international exchange agreement with SDSU. At the time of the trip, SDSU students were studying at the university.

"Our students were able to make connections with their SDSU classmates which added yet another element to the trip," she says.

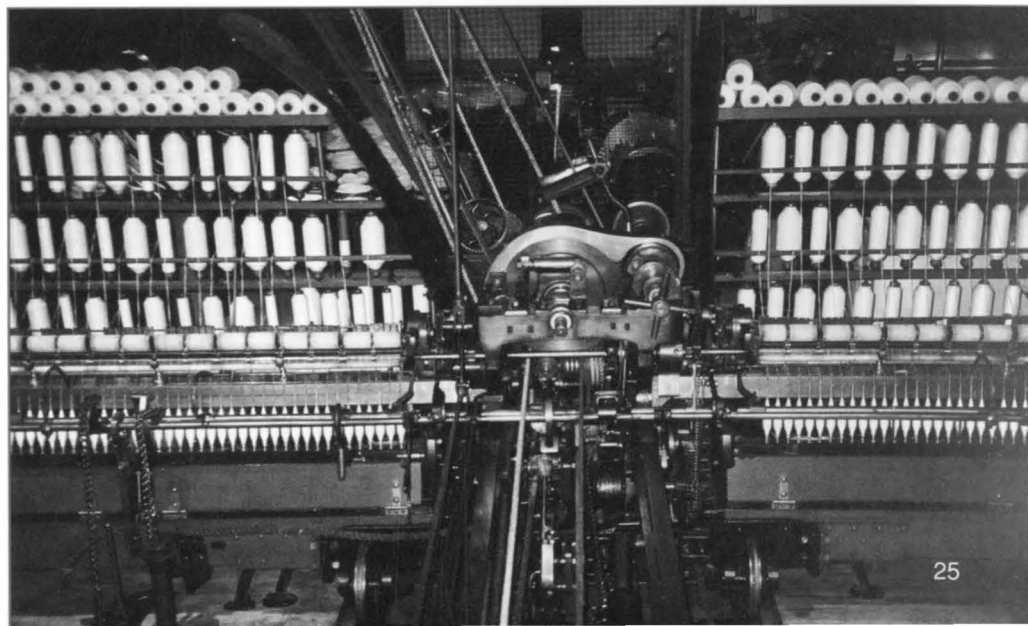
Before the trip, Lentz had no desire to travel abroad, but now she's planning her next trip to Europe.

"I was able to experience so much culturally and historically," she says. "This trip has made me aware of our manufacturing origins which is very relevant to my future. I love seeing new cultures and learning from their practices, both past and present."

For Heinemann, the trip put his studies in proper perspective. "Although this trip put emphasis on all disciplines of engineering, I gained a greater respect for those creative inventors who have come before us.

"I highly recommend this trip to any engineering major interested in appreciating how far we've come as a technical society in such a short amount of time," he adds.

*Kyle Johnson*



# Distinguished Engineers

*credit college with past, present success*

*Two electrical engineers and a civil engineer joined the ranks of Distinguished Engineers at the annual banquet April 22 at Peterson Recital Hall.*

*Added to a list that has been growing since 1977 are:*

- *Marwan Hassoun '83, electrical engineering, senior director of engineering for the communications technology division of Xilinx in Austin, Texas.*
- *Dennis Micko '68, civil engineering, president and Brookings office manager of Banner Associates of Brookings.*
- *Jim Morgan '69, electrical engineering, president and chief executive officer of Daktronics of Brookings.*

*Morgan and Micko are the second men from their firm to be chosen as Distinguished Engineers. In fact, Morgan's predecessor, Aelred Kurtenbach was tabbed for the honor in 1990. Frederick Rittershaus, who was senior vice president at Banner, was chosen in 1994.*

*Like the aforementioned men, Hassoun also has a Brookings connection. The 44-year-old is the oldest son of retired SDSU Civil Engineering Professor Nadim Hassoun.*



## Hassoun

Hassoun says being named a Distinguished Engineer means a lot to him. "I hope this means that I made a difference," he says. "It is a great honor for my alma mater and my colleagues to bestow this on me. I am grateful and humbled."

Hassoun received his degree in electrical engineering with minors in computer science and mathematics. He was involved in the start up of RocketChips, a high-speed integrated circuits design company. In 2000, RocketChips was acquired by Xilinx, and he became director of engineering for the new RocketChips Division.

He is also the managing partner for TraChip, a technology licensing company, and still holds the title of

collaborating professor in the Department of Electrical and Computer Engineering at Iowa State University. (He taught in the department from 1988 to 1998.) Hassoun has also co-authored more than seventy technical publications, several chapters of three books, is a co-inventor of more than twelve granted patents and some that are pending.

Even though all of these accomplishments are impressive, Hassoun credits his success on the smaller achievements.

"I think my greatest career achievement," Hassoun says, "is an accumulation of little achievements made up of the successes of the many young engineers that I had the opportunity to teach and guide over the years through my tenure as a university professor and in industry."

Hassoun remembers his days at SDSU fondly. "My college days at SDSU were full of challenges and accomplishments," he says. "My professors were key motivators for me to pursue knowledge beyond the boundaries of the classroom and my fellow students helped me get through the tough hurdles and shared the joy of the successes we had together."

On a lighter note, Hassoun says he has one favorite memory of SDSU. "My favorite accomplishment is probably leading the team that built the EE float for Hobo Day. It was a collaboration of many of the students and together we put on an incredible display."

Hassoun says when he thinks about the future, he does have a few goals. "My aspirations, professionally and personally," he says, "are to continue to push engineers to reach for excellence and create leading-edge technology that positively touch as many people as possible."



## Micko

Micko says, "It's a little bit overwhelming," to receive this honor. "I've sat as a chair on the selection committee so I've been privileged to see applicants and know how distinguished they are. I told Dean [Lew] Brown to be included in that group is very humbling."

Micko, who added a master's degree in 1969 an emphasis in structural design, says he's especially happy to send out the message that you don't always have to leave and go to a bigger city to find success. "The University has a wonderful ad campaign going right now,"

Micko says. "But sometimes you think you have to leave Brookings to really go anywhere. However, you can have successful careers right here."

Micko, who has been at Banner for thirty-four years, says his greatest career achievement has been being the lead engineer of record on the new Missouri Bridge near Vermillion. He is also an engineer of record of one of the state's largest projects: The Lewis and Clark Water Project. "It's an excess of \$400 million," he says. "And we're getting close to the finished product. It's really exciting to be part of that."

On a personal level, Micko says he's most proud of being able to raise four children and see all of them graduate from college. "That's a huge personal accomplishment both my wife, La Donna, and I are proud of," Micko says.

Micko is also partly responsible for providing a hangout for kids in Brookings. "My recent passion is helping to establish the Boys and Girls Club," he says. "It's something we've needed since I came to town. To see its early success is really satisfying."



### **Morgan**

Morgan moved into his current position at Daktronics in 2001. Morgan joined Daktronics in 1970, when it was a two-year-old company and he was a graduate student obtaining his master's degree in electrical engineering.

Morgan was responsible for the design of the first Daktronics scoreboard, the

Matside scoreboard, in 1971. He also led the design, manufacturing and installation of the first Daktronics swim timing system, a plant control system for a municipal water treatment plant, and the first Daktronics outdoor electronic message center.

In 1980, Morgan was project engineer for Daktronics' first major involvement in an Olympic event, the 1980 Olympic Winter Games in Lake Placid, New York.

Morgan says being named a distinguished engineer is a great feeling. "It's great to be recognized by a peer group at the University," he says. "And also to be listed along with all the other people who have done such great things in the world and had such great accomplishments. To be recognized is a real honor."

Morgan attributes his greatest career achievement to Daktronics. "I've spent my whole career at Daktronics and we've been able to grow a company from nothing, really," he says.

"It was a simple idea at first. We've now been able to grow a company that employs more than 900 part-time workers and 1,400 full-time people. To provide that kind of an impact to the economy of Brookings and the state of South Dakota is very rewarding. . . . it's a win-win situation for everybody."

## **History, procedure of award explained**

The Distinguished Engineer award was introduced on February 26, 1976, under the direction of Dean Junis O. Storry. The purpose of the award is to recognize and honor those who have demonstrated eminent achievements in a field of engineering.

Outstanding achievement in other fields is also given consideration, provided the nominee is an SDSU engineering graduate.

Selection procedures were developed and implemented and the first awards were presented to twenty-two SDSU alumni in 1977. Since it began, the award has been given to more than 100 engineers.

### **Eligibility**

The award may be presented to a person who meets one or more of the following four criteria:

- A graduate of any college of SDSU who has made truly great accomplishments in a field of engineering.
- A graduate of the SDSU College of Engineering who has made truly great accomplishments in a non-engineering field such as military, law, medicine, business, management, etc.
- A graduate of the SDSU College of Engineering who has demonstrated truly great entrepreneurial success and/or business development.
- Anyone who has made a truly great contribution to the practice of engineering within the state of South Dakota.

However, there are no hard and fast rules of procedure or point systems to define what is "truly great." There are great

difficulties in devising such a system and the judgment of the review committees and dean will prevail, as it has in the past.

Active members of the SDSU faculty or administration are not eligible for the award but emeriti and posthumous members of the faculty and administration are eligible.

### **Nominations**

Nominations can be submitted by anyone to the dean's office by January 15. Then, the distinguished engineer review committee, and the faculty review committee examine the nominations.

As each nomination is received, the dean will mail a framed certificate of nomination to the nominee.

The distinguished engineer review committee considers all of the nominations and returns a recommendation to the dean for the selection. The dean forwards these recommendations to the faculty review committee for review and approval. Any name forwarded for selection should have the majority support of both committees. Unanimous support is preferred. The dean uses the recommendations of the two committees in making the final decision.

### **For more information:**

[www3.sdstate.edu/Academics/CollegeOfEngineering](http://www3.sdstate.edu/Academics/CollegeOfEngineering), call the dean's office at 605-688-4161, or e-mail [Lewis.Brown@sdstate.edu](mailto:Lewis.Brown@sdstate.edu)

# Distinguished Engineers

## List of Distinguished Engineers tops 80 since 1977

*Marwan Hassoun, Dennis Micko and Jim Morgan are the latest addition to the Distinguished Engineers list, which began in 1977 and now totals eighty-one. Their names are listed below, along with their year of graduation (from SDSU unless otherwise noted), major and positions they have held.*

### 1977

- Steven F. Briggs '07, electrical, co-founder, Briggs & Stratton Corporation, Outboard Marine Corporation
- David A. Christensen '57, industrial, president and CEO, Raven Industries.
- Charles L. Coughlin '09, electrical, former president, chairman of the board and CEO, Briggs & Stratton Corporation
- Donald E. Craig '32, electrical, vice president and general manager Turbine-Generator Division, General Electric Company.
- Harold M. Crothers '10, mathematics, dean of engineering emeritus, former acting president and vice president SDSU
- Everett W. Dunn '13, civil, construction engineer on major military and nuclear projects, consultant to the federal government
- William H. Gamble '25, electrical, professor emeritus and former head Electrical Engineering Department, SDSU
- Robert D. Mitchell '32, sanitary engineer, retired senior vice president and chief, Malcolm Pirnie.
- Archie Higdon '28, math, Brigadier General USAF retired, former dean of engineering & technology California Polytechnic State University
- Robert G. Hoover '35, civil, construction engineer, vice-president-administrator, Massman Construction Company
- Loys A. Johnson '30, civil, Commander USN retired, professor, building & construction, University of Florida in Gainesville

- Leonard E. Johnston '33, electrical, project engineer, consultant & retired senior vice-president, Sverdrup & Parcel and Associated, Inc.
- Leonard J. Linde '29, mechanical, retired director of engineering, Allis-Chalmers manufacturing Co.
- Melvin L. Manning '27, electrical, dean of engineering emeritus, SDSU
- Calvin C. Oleson '25, civil, engineering educator, principal research engineer, Portland Cement Association
- Wayne H. Peters '51, civil, executive vice president and general manager, Egger Steel Company
- Harry L. Solberg '20, mechanical, retired head of mechanical engineering and assistant dean of engineering Purdue University
- Raymond W. Sundstrom '28, civil, retired chief of water resources division, United States Geological Survey, member US Aid Mission to UAR
- Clifford W. Welsh '39, mechanical, vice president-sales, Kerr Glass Manufacturing Co.
- Robert A. Wilkins '51, electrical, president and chief operating officer, Northwestern Public Service Co.
- Donald A. Williams '28, civil, retired administrator of the Soil Conservation Service, consultant to the Ford Foundation
- Leshler S. Wing '16, mechanical, retired regional director of the Denver and San Francisco offices, Federal Power Commission

### 1978

- Gene M. Amdahl '48, engineering physics, computer engineer, chairman of the Board of Directors, Amdahl Corporation
- Dewey J. DeBoer '22, electrical, retired executive manager, Nebraska Public Power Systems, Columbus, Consultant to the US Aid Program
- Warren D. Fish '16, civil, retired engineering administrator, Bureau of Public Roads, Department of Commerce
- LeRoy F. Harza '01, mechanical, hydroelectric engineer, Founder of the Harza Engineering Company

- Jack W. Wild '48, physics, space systems engineering, chief, Shuttle Upper Stages Branch, National Aeronautics and Space Administration
- Marvin J. Willrodt '49, electrical, developer of high-speed electronic counters, application engineer, sales group, Hewlett-Packard Company

### 1979

- Richard T. Buesing '50, electrical, manager-advance systems and technology, mobile radio department, General Electric Company
- John M. Hanson '53, civil, consultant on structural behavior, vice-president of operations, Wiss, Janney, Elstner and Associates, Inc.
- William S. Lowe '31, electrical, former president and chairman, A.P. Green Refractories Company, U.S. Chamber of Commerce
- Ernest E. Michaels '20, civil, engineer, community leader, industrialist, retired president of Chicago Bridge and Iron Co.
- George H. Oleson '49, electrical, vice president of Hughes Systems Management International, Hughes Aircraft Co.

### 1980

- Ernest L. Buckley '47, civil, professor of architecture and director of housing research and design center, the University of Texas at Arlington
- Milo A. Dudden '41, mechanical, founder and president, Gas and Mechanical Laboratory
- Jerome A. Storry '46, mechanical, food technology engineer, Davy McKee Corporation, Engineers and Builders

### 1981

- Mark E. Barber '41, civil, engineer-builder-military officer, director of engineering and construction, Denver Water Department
- James S. Boyd '39, agricultural, specialist on agricultural structures, professor of agricultural engineering, Michigan State University

- Henry H. DeLong '38, agricultural, educator and promoter of rural electrification, professor emeritus of agricultural engineering, SDSU
- John D. Dyson '49, electrical, engineer-researcher-inventor, professor of electrical engineering, University of Illinois
- Donald D. Haselhorst '56, electrical, engineer-planner-community leader, branch chief, advanced aircraft leader, McDonnell Aircraft Company

- Ronald J. LaVallee '58, engineering physics, engineer-researcher-community leader, branch chief advanced aircraft avionics, McDonnell Aircraft Company
- Robert B. Yule '24, civil, professor structural and civil engineering, community activities, retired partner of Yule, Jordan and Associates

### 1982

- Roland J. Jensen '60, mechanical, nuclear engineer and utility executive, vice president-commercial and division operations, Northern States Power Company
- Frederick Harold Leinbach Jr. '50, physics, professor-researcher-administrator, acting director-space environmental laboratory, National Oceanic and Atmospheric Administration
- Kenneth H. Spies '37, civil, sanitary and environmental engineer, Oregon State Board of Health, Oregon Department of Environmental Quality

### 1983

- Merle L. Esmay '42, agricultural, professor of agriculture engineering, Michigan State University
- Merlyn E. Schlenker '51, electrical, founder Schlenker Enterprises.
- C. Milo Thelin '24, civil, public works director Fort Worth, Texas
- Lawrence R. Thielen '50, electrical, founder Aventek.

## 1984

- Charles A. Lundquist '49, engineering physics, director of research, University of Alabama in Huntsville.
- Albert L. Pugsley '30, civil, former president, Youngstown (Ohio) State University
- Leonard F. Swanson '51, civil, public works director, City of Rapid City

## 1985

- Errol P. EerNisse '62, electrical, president Quartex, Fellow of IEEE
- Hans G. Jepson '31, civil, colonel-U.S. Army, ordinance environmental engineer, health department, Commonwealth of Virginia
- Dennis L. Moe '48, agricultural, department head agriculture engineering, SDSU
- Dale C. Ryman '35 agricultural '38 civil, chief construction engineer California Division of Highways and Freeways, first benefactor of the College of Engineering

## 1986

- James L. Mann '49, civil, former executive vice president S.J. Groves and Sons, president Green Holding Company, Dallas
- John A. Schmidt '62, engineering physics, head of applied physics division Plasma Physics Laboratory, Princeton University

## 1987

- Delbert M. Leppke '51, electrical, senior technical manager Fluor's Corporation, Chicago
- Junis O. Storry '42, electrical, former dean of the College of Engineering, Amdahl Distinguished Professor of Engineering, SDSU

## 1988

- Russell E. Christiansen '59, industrial, chairman, president, CEO Midwest Energy Company, Iowa Public Service Company
- Harold H. Hall '48, physics, vice president, corporate research group, Xerox Corporation
- Emory E. Johnson '36, civil, professor emeritus, former head of Civil Engineering Department, SDSU

## 1989

- James A. Larson '51, civil, senior project engineer, senior geotechnical engineer, Sverdrup Corporation
- Robert C. Olson '60, electrical, general manager of technology development division, general manager of computer manufacturing division, Control Data Corporation

## 1990

- Aelred J. Kurtenbach '61 (South Dakota School of Mines and Technology) electrical, president and CEO, Daktronics

## 1991

- Byron J. Anderson '68, electrical, general manager, Hewlett Packard, Communication Test Business Unit
- James N. Dornbush '49, civil, professor emeritus, SDSU
- Richard B. Hayter '65, mechanical, director engineering extension program, Kansas State University

## 1992

- William G. Borghard '52, civil, commissioner department of environmental facilities, Westchester County, NY
- Leon D. Crossman '61, engineering physics, vice president and director science and technology, Dow Corning Corporation

## 1993

- Robert F. Risch '49, electrical, executive director, Missouri Basin Systems Group

## 1994

- Donald H. Kukuk '51, civil, vice president, Boyle Engineering
- Frederick J. Rittershaus '58, civil, senior vice president, Banner Associates, Inc.
- Jerald A. Tunheim '62, engineering physics, president, Dakota State University
- John L. Wiersma '43, director Water Resources Institute, professor agriculture engineering, SDSU

## 1995

- Delvin D. Eberlein '62, electrical, vice president of technology, Cray Research.
- Wayne E. Knabach '49, electrical, professor of electrical engineering, SDSU

## 1996

- Frank R. Knutson '65, electrical, general manager, Tri-State Generation and Transmission Association.
- Neil R. Patterson '51, A.S.H.R.A.E. Fellow and past president, retired corporation manager of application engineering, Trane Company

## 1997

- Richard A. Berreth '58, mechanical, retired vice president of manufacturing, Haworth
- Dale A. Bucks '68, agricultural, national program leader water quality and water management, USDA Ag Research Service

## 1998

- Richard R. Bell '70, civil, chairman, president and CEO, HDR
- Dennis R. Little '65, mechanical, vice president and general manager, GE Military Engines Operations
- Jerome J. Lohr '58, civil, president and owner of J. Lohr Properties, and J. Lohr Winery and Vineyards

## 1999

- Paul G. Cummings '50, electrical, retired industry standards engineer—motor and business group, General Electric Co., Life Fellow Member, IEEE
- Bruce L. Miller '47, physics, professor emeritus physics department, SDSU
- Harlow J. Miner, Jr. '53, mechanical, retired advisory engineer—design and producibility engineering, Division of the Electroni Corporation

## 2000

- Merlyn Isaak '57, civil, senior vice president, Signet Testing Laboratory, Inc.
- Duane Sander '64, Ph.D. electrical, Iowa State University, retired dean of engineering, SDSU

- Ronald D. Schmidt '63, electrical, co-chairman of board, Artesyn Technologies

## 2001

- Donald J. Edwards '60, agricultural, director of special projects for the Institute of Agriculture at the University of Nebraska
- Harold Hohbach '44, electrical, partner/patent lawyer for Flehr Hohbach Test-Aibration & Herbert
- John (Jack) Marshman '55, civil, senior vice president, Sioux Falls Construction
- Charles A. Onstad '72, Ph.D. agricultural, director of the southern plains area, USDA Agricultural Research Service

## 2002

- Robert G. Dutcher '67, electrical, president and CEO, Possis Medical.
- Virgil G. Ellerbruch '60, electrical, University of Wyoming, retired dean of engineering SDSU
- Leon B. Ellwein '64, mechanical, associate director for Applications of Vision Research, advisor to the director, National Eye Institute-National Institutes of Health
- Roger M. Larson '61, civil, senior pavement engineer, Federal Highway Administration
- A.J. Van Dierendonck '61, electrical, engineering consultant, AJ Systems/GPS Silicon Valley

## 2003

- Alyn Holt '59, electrical, director and chairman of the board, inTest Corporation
- John Madden '61, agricultural, president, DeWild Grant Reckert and Associates Company
- Thomas Weaver '60, electrical, transmission project manager, International Utilities Structures.

## 2004

- Marwan Hassoun '83, electrical, senior director of engineering, Xilinx
- Dennis Micko '68, civil, president and chairman of the board, Banner Associates
- Jim Morgan '69, CEO, Daktronics.

# You can go Anywhere From Here!

## Alums featured in SDSU television campaign

Sweden. Florida. Kansas. Wisconsin. Dell Rapids.

These places are just a few examples of SDSU's engineering graduates who have gone "anywhere from here." At least seven engineering graduates have been featured in the *You Can Go Anywhere from Here*® television promotion, which began in 2000, according to Jennifer Crickard, director of University Relations.

"The College of Engineering has a long tradition of providing rigorous programs of academic excellence combined with great personal care for students," says Dean Lewis Brown. "Most of our alums choose to remain in touch with the College of Engineering and many have shared with us their testimonials of the great personal care shown for them by our faculty and staff. I believe that combination has helped nurture many students and prepare them to achieve both professional and personal success.

"We are very proud of the significant accomplishments of all our College of Engineering alums. One simply needs to do no more than read the biographies of Douglas Forsyth, Michael Johnson, Kathryn Walker, and Justin Williams to see that you really can go anywhere from here at SDSU."

Add to that list Thomas Van Lent, Lance Guymon, and Michelle Knuppe—all of whom have been featured in the campaign.



### Michelle Knuppe '99

Not all SDSU grads stray far from their alma mater to build successful careers. Take Michelle Knuppe for example.

An internship led to the beginning of Knuppe's career at the United States Geological Survey's EROS (Earth Resources Observation Systems) Data Center north of Sioux Falls. After she completed her internship with EROS, she was hired upon her graduation in December 1999.

In her position as scientist, she works on a project called LANDFIRE. For the project, Knuppe says she works to develop methodology to produce data and imagery of vegetation conditions and risks at the national, regional, and local levels for implementation of the National Fire Plan.

The engineering physics graduate cites diversity as one of her favorite things about EROS, which employs more than 600 workers.

"There are always new projects, new subjects," says the Rapid City native.

She says that finding different ways to study something remains one of the challenges of her job. Knuppe describes two specific experiences as a student that prepared her for her career.

A senior engineering project in conjunction with her internship gave Knuppe her first experience with EROS.

"It gave me a better understanding of the outside," says Knuppe of her project, a study of the different methods and instruments she used during her internship to collect data from sunphotometers, or instruments that measure the sun's energy by its wavelengths.

Knuppe recalls a weeklong trip and tour of companies in South Dakota, North Dakota, and Minnesota that also made an impact on her as a student.

"That gave me a better understanding of what's out there," she says. "It gave you an idea of how everything else fits together."

Knuppe now lives in Dell Rapids with her husband Jay, a State alum, and their three children, Trent, Jayda, and Victor.

The mother of three is currently working on her master's degree in geography at State.

### Justin Williams '95, '96

Even with its growing enrollment figures, SDSU's enrollment of 10,000-plus students seems small compared to that of the University of Wisconsin-Madison.

More than 41,000 students are enrolled at the university where Justin Williams now teaches. He was appointed to his new

## DEAN'S CLUB

### Contributions made to the Greater State Fund January 1, 2003 - May 31, 2004

Support from alumni, corporate donors, and friends has come to be essential to institutions of higher education.

Contributions have made possible the development of activities that have won recognition for the SDSU College of Engineering

as one of the nation's leaders in engineering education.

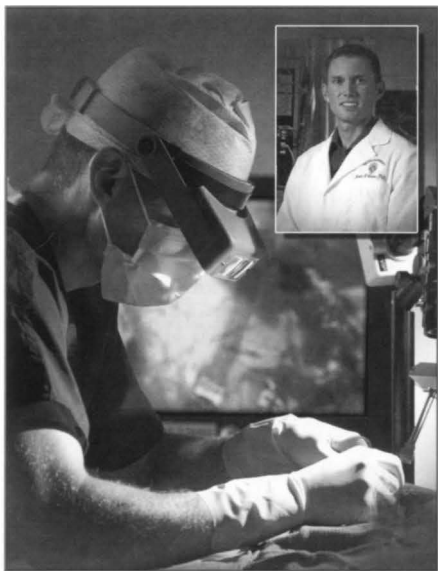
We have benefited, and those who have been generous in their gifts share with us the satisfaction that comes from achievements of our faculty and students.

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Basin Electric Power Cooperative  
Vernon L. Baumberger





*"SDSU has a number of unique features. One is that you get a pretty good, solid background."*

Justin Williams '95, '96

position as professor of biomedical engineering and neurosurgery in March 2003.

The Dell Rapids native works as the director of his own neural engineering laboratory as well.

Williams graduated from State in 1995 and in 1996, first with a degree in mechanical engineering, and then with a degree in engineering physics. He then earned both a master's and doctorate degree in bioengineering from Arizona State University in 2001. In 2003, he completed a post-doctoral, dual fellowship in neurosurgery between the University of Michigan and the University of Wisconsin.

Williams says he likes both the diversity and flexibility that his current position offers, including the chance to set his own hours. While he spends less than half of his time teaching classes, Williams works with graduate students in the lab.

In the lab, Williams works with others to develop implantable devices and technology to treat patients with Parkinson's Disease, epilepsy, and ALS, more commonly known as Lou Gehrig's Disease.

As director of the lab, Williams' duties extend beyond research. He compares the responsibilities of running a lab to those of running a business, including preparing budgets, for example.

He says he finds "juggling all the different responsibilities" challenging. However, he says his undergraduate experiences at SDSU, such as teaching classes and performing research, prepared him for the diversity he would later experience in his career.

"SDSU has a number of unique features," he says. "One is that you get a pretty good, solid background." Williams credits the sense of community and personal attention students receive at State.

"Sometimes at larger universities, it's easy for a student to get lost," he says. "It's [SDSU] a really good, tight-knit campus environment."

### Thomas Van Lent '80

Degrees in French and engineering may not be a typical combination, but for Thomas Van Lent, a marriage of the arts and sciences has served him well.

Originally from Beresford, Van Lent graduated in 1980 with bachelor's degrees in civil engineering and in French.

"I really loved French literature," he says.

Recently promoted, Van Lent works as deputy director of Everglades restoration projects and resource management at Everglades National Park and Dry Tortugas National Park, both in Florida. The Dry Tortugas is a set of islands seventy miles west of Key West.

In his work, Van Lent says he often deals with public policy and water



*"I think it's very important to get a well-rounded education. A university like SDSU is the only place you can do that."*

Thomas Van Lent '80

management issues more than actual engineering practice.

"I think a combination of liberal arts as well as technical training prepared me for a variety of issues I have to face," he says. Van Lent notes that trying to find a consensus on these issues remains a challenging part of his work, but a part in which he is grateful for his liberal arts education.

He adds that his education at State was "exactly what I needed to prepare me for my career."

Prior to his position as deputy director, Van Lent worked as chief hydrologist for the Everglades. As hydrologist, he made computer models based on water data he collected, including data on rainfall, water levels, and tides.

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## ■ Alumni Profiles

### You can go Anywhere From Here!

Van Lent says he finds the combination of being part of the effort to restore the Everglades, as well as being able to spend his free time in the area, the most rewarding things about his career.

Van Lent earned his master's degree in hydrology from the University of Minnesota in 1982. He then went to Florida, where he worked as a water resources engineer for the South Florida Water Management District. There, he says, he developed computer models to simulate Everglades hydrology and the Central and Southern Florida Flood Control Project, the second-largest water control project in the country.

Van Lent earned his doctorate at Stanford in 1992, and then returned to Florida. After Hurricane Andrew, however, he returned to State for two years to teach in the civil engineering department before again returning to work in Florida. He resides with his wife, Lois, and two sons, Nate and Gerrit, in Key Largo.

Van Lent's father, John, graduated from State as well.

"I think it's very important to get a well-rounded education," says Van Lent. "A university like SDSU is the only place you can do that. I very much value the education I got at SDSU."

### Doug Forsyth '71

Stormy weather seems to bode well for Doug Forsyth.

As chief of the radar research and development division at the National Severe Storms Laboratory in Norman, Oklahoma, Forsyth works to better radar technology. He currently leads two major areas of research: phased-array and dual-polarization.

Used by the Navy, phased-array technology, developed in the 1970s, allows

radars to scan electronically instead of mechanically, collecting data five to six times faster than today.

"We're now converting that technology over to use in weather radars," says Forsyth of the ten to fifteen-year project.

Dual-polarization capability collects data horizontally and vertically, instead of just horizontally like the traditional Doppler radar currently in use.

"We not only get more, but better information with dual-polarization radar," says Forsyth, who has been working on the project since 1989.



While meteorologists infer the presence of hail from current radar data, dual-polarization data reveals the actual presence of the icy precipitation, according to Forsyth. He says the new technology should be in use by 2007 or 2008.

"It's always challenging working on state of the art equipment," says Forsyth. Despite the challenges, he says satisfaction comes from the ability to improve severe

weather warning times and provide longer lead times for the detection of tornadoes.

Forsyth works in another position in Norman as well.

"I'm the program manager for providing the National Oceanic and Atmospheric Administration [NOAA] a new facility here in Norman," he says.

The new \$67 million, 244,000 square foot facility will house all five of the NOAA's Norman-based weather organizations under one roof, Forsyth says. What began as a new facility for the National Severe Storms Laboratory in 1990 has grown into a joint venture with the University of Oklahoma to be completed in 2006.

As executive director for facilities and strategic planning, the Brandt native gets to test the waters of construction management.

To prepare for his leadership responsibilities, Forsyth took part in two leadership programs—including one eight-week course at Harvard, making him a certified Harvard alum.

Being both a SDSU alum, and a native of South Dakota, makes Forsyth proud. "It served me well for providing a good background for moving into meteorology," says Forsyth of his SDSU education.

"Electrical engineering gave me the basis for really moving into what I do today. I have SDSU to thank for my wonderful career."

### Michael Johnson '90

Many may consider Michael Johnson fortunate. He has a career which encompasses not one, but two of his passions.

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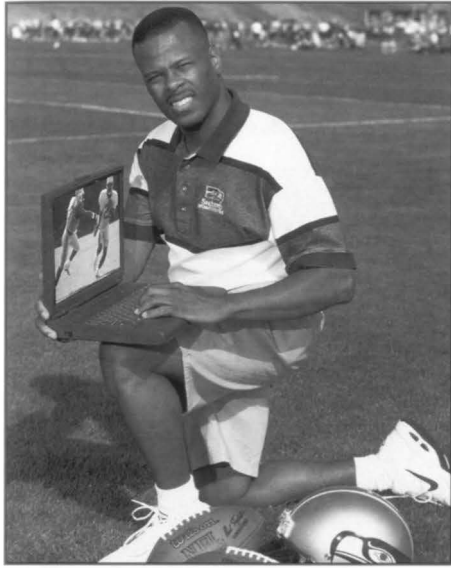
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*"As a student at SDSU there was no place to hide in the classroom. The class sizes were small, and the professors know your name."*  
 Michael Johnson '90

"I truly enjoy high tech and am passionate about football," he says. "That is my job."

Johnson works as director of information systems for the Seattle Seahawks football team. This November, he will have been in that position for seven years. Prior to the Seahawks, Johnson worked as a network administrator for Providence Health Plans in Seattle, and as an engineer for the Naval Undersea Warfare Center in Keyport, Washington.

Johnson's duties as director of information systems, he says, include developing football operations software applications, and "align[ing] information

systems with the needs of football operations and the requirements of other departments."

In addition, he says, he works to provide support for staff information systems needs, and manages his department's fiscal budgets.

"We have been very successful providing information systems to our organization," Johnson says. "Sometimes, we make it look easy to our customer. Trust me, it is not. But proper training and planning have allowed us to be successful."

The 1995 Northwest nominee for the Black Engineer of the Year/Most Promising Engineer award, Johnson graduated from State in 1990 with a degree in electrical engineering.

"I truly believe that an engineering degree is the best four-year degree to get. It has prepared me for positions from a beginning engineer, to program manager, to director of information systems," says Johnson, who was born and raised in South Minneapolis.

"As a student at SDSU there was no place to hide in the classroom. The class sizes were small, and the professors know your name."

Johnson lives with his wife, Linda, and two children, Michael and Syndee, in Renton, Washington. He says he has lost touch with several of his engineering classmates, and would like them to contact him. He can be reached via email at MichaelJ@Seahawks.com.

### **Kathy Walker '81**

When Kathy (Waples) Walker began her education at State, she says she learned at orientation that "'only one out of seven of the women that start in engineering complete [the program]'" according to an



*"Civil engineering was a great preparation for the business world. The combination of problem solving and the need for business and financial acumen are well served by the two degrees I obtained."*

Kathy Walker '81

April 19 article by Charlie Anderson in the *Kansas City Business Journal*.

The same article cites Walker as "the highest-ranking woman officer at a telecommunications giant."

"Currently I am the executive vice president of network services at Sprint—in charge of all of the technology within the organization," she says.

Walker, who has been at Sprint for nearly nineteen years, oversees the design and operation of several Sprint networks, including its nationwide PCS wireless network. She leads one of the most

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## You can go Anywhere From Here!

dynamic scientific groups in the telecommunications industry. Under her leadership, Sprint scientists and engineers are studying new ways to combine wireline and wireless technologies.

Walker, who has been featured in the *Wall Street Journal*, calls "coaching others for success within the organization and seeing teams across the company pull together and solve unsolvable problems" one of the most rewarding things about her career. To her 7,650 employees, she instills a sense of pride in their work, inspires them to be creative in their solutions, and encourages them to be ready for the next challenge.

Prior to her work at Sprint in Overland Park, Kansas, Walker worked for Wisconsin Bell, where she installed telephone lines, according to the *Business Journal*. She worked her way up in the ranks of US Telecom, which would later become Sprint.

"The job I'm in right now is my dream job," she tells the *Business Journal*.

Originally from Aurora, Walker graduated from State in May 1981 with a degree in civil engineering. Her father, Jim, is a retired SDSU horticulture professor.

She earned a master's degree in engineering management from the University of Missouri-Rolla in December 1982, and a degree in professional engineering there as well.

"Civil engineering was a great preparation for the business world," she says. "The combination of problem solving and the need for business and financial acumen are well served by the two degrees that I obtained."

### Lance Guymon '87

A mechanical engineering degree at State gave Lance Guymon the chance to travel abroad, and provide opportunities for future engineers back in the United States.

Guymon works as an engineering manager for Wolf Robotics, a Fort Collins, Colorado, company that builds welding robots for companies such as John Deere and Harley Davidson.

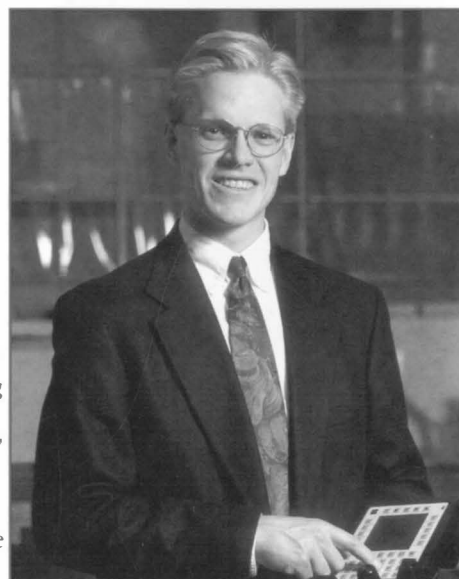
Prior to his current position, Guymon spent three years working in Sweden with engineers from several countries, including France and Poland.

"It was fantastic. We really enjoyed it," says Guymon of his time in Sweden. "Certainly, I wouldn't have had that opportunity without an engineering degree from State."

Originally from Mitchell, Guymon received his first international experience when he worked for one year in Germany, an opportunity given him four years after he graduated from State.

Guymon's trip to Sweden is just one of several chances he has had to measure his SDSU engineering degree against those of other universities, including Stanford and the Massachusetts Institute of Technology. He says that his education has proved as good or better than that of his colleagues, which he says reflects more on the education he received than on himself.

"I always felt I had a really good, solid technical education at State," says Guymon. He adds that in addition to his education in the classroom, he interned at Daktronics in Brookings through an arrangement between the company and SDSU.



*"It was fantastic. We really enjoyed it. Certainly, I wouldn't have had that opportunity without an engineering degree from State."*

Lance Guymon '87.  
of his time in Sweden

"That was a really good experience for me," says Guymon, who is now working to begin a similar program at Wolf Robotics with engineering students from Colorado State University.

While he still enjoys the technical aspects of his job, he says he finds working with young people and providing them opportunities one of the most rewarding aspects of his career. He says

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that while interviewing engineering students, he finds himself comparing their experiences with his at State.

"One thing I would really say that State has going for it is smaller class size," he says. "I have extremely fond memories of my time at SDSU."

His wife, Lori, is a State alumna as well. The couple lives with their 10-year-old son Nate in Fort Collins.

*Denise Watt*

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Summer 2004



# Kaspar

*salutes SDSU in personal, professional success*

Many people salute her, but when it comes to her success, Col. Beth Kaspar '80, salutes SDSU.

The electrical engineering graduate has spent more than twenty-three years in the United States Air Force. Col. Kaspar is a senior acquisition program manager for the Department of Defense. She plays a major role in the development and deployment of advanced weapon systems.

"I graduated from SDSU in December 1980 with a BSEE and as a 2nd lieutenant in the USAF. I was on my first Air Force duty station thirty days later working on the development and fielding of an advanced communications system. So in essence, I just lucked into this career field and have loved it ever since," she says.

"I decided right then that at some point I would be in charge of delivering new war-fighting capability to the men and women in our Armed Forces. Since then I have been involved in all aspects of weapon systems development, from idea conception to proof of concept technology prototyping, to full militarized system development and fielding, and later on upgrade for all services within the Department of Defense."

Kaspar's key domain area of development expertise is that of Intelligence, Reconnaissance, Surveillance and Targeting.

## **Ambitious graduate**

After graduating from SDSU, Kaspar decided to further her education. She has three master's degrees in electrical engineering (Syracuse University), systems engineering (Western New England College), and strategic studies (Air Force University). She is also a distinguished graduate from various military leadership schools such as Air Command and Staff College.

## **Diving into success**

Kaspar is a Brookings native. "Sometimes I look back on my early days growing up in Brookings and I think of how lucky I

am," says the 1976 Brookings High School graduate. "In my early years I rode my bike up to the swimming pool and spent lots of time there with my twin sister, Bonnie. I was also active in 4-H."

All of her days spent at the pool led her to the swim team and was eventually named Brookings Swim Team athlete of the year.

Her love for the water continued right through college, all while juggling challenging courses of an engineering student. Kaspar was a four time All-American swimmer at SDSU.

"Beth was always a very competitive person," says her mother Signe Anderson. "She is very ambitious and is definitely an achiever," she says. Kaspar's father, Art, agrees with his wife. "She never liked someone to get ahead of her."

Kaspar's parents say they never really had to push her to do something and they never gave up on her. It seems one of their philosophies could read, 'when the going gets tough, the tough get going.'

"As a child, I spent three years in summer school learning to read," Kaspar says. "Don't give up on your kids."



## **Soldier, wife, mother**

Kaspar knows what she's talking about; she has two children of her own, Jake, who just completed kindergarten, and Skylar, who recently finished second grade.

Kaspar, her husband Tom, and the two boys live in Bowie, Maryland, near Baltimore.

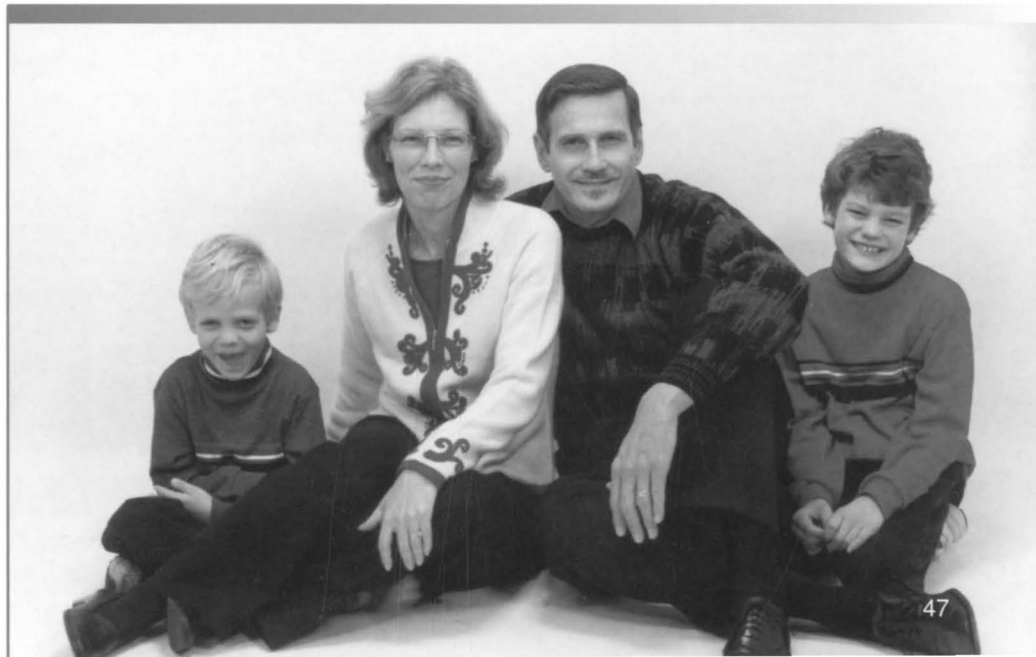
## **Simple rules**

Kaspar has a rule she lives by, even when life can get hectic. "Separate your home life and your work life," she says. "The first gives you the strength to handle the trials of the second."

However, Kaspar says people can't be successful if they aren't happy. They have to like their career. "Enjoy what you do," she says. "You spend at least eight hours a day at work. If you don't enjoy it, do something else."

*Greta Stewart*

Col. Beth Kaspar with husband Tom and sons Jake, left, and Skylar.



# Building on Great Relationships

Greetings from the SDSU Foundation. As the new director of development for the College of Engineering I'm excited to be a part of the great relationship the College has with its alumni and friends. My role is to help identify the College's needs and develop current and new relationships to fulfill those needs. As an 1988 graduate of SDSU, I have seen the value of the University in education, research, and service.

My wife, Mary (Kundson) Reed (BSME '89), and our family live in the shadow of the Campanile. My professional life has taken me from supply chain planning to information technology systems before joining the SDSU Foundation in June.

In this issue is a list of all the donors who have given to the College. Each of these individuals is important in creating tomorrow's leaders in engineering and advancing the field of engineering. These donations create scholarship and graduate study opportunities, improve facilities and equipment, and help develop the College.

In future issues, I will update you on how donors are helping develop the College. I will also explain how you can participate in these development opportunities.

I look forward to building on the great relationship we have with our alumni and friends, who strengthen the College in accomplishing its mission. Thank you for your continuing support.

*Tim Reed*

Director of Development College of Engineering

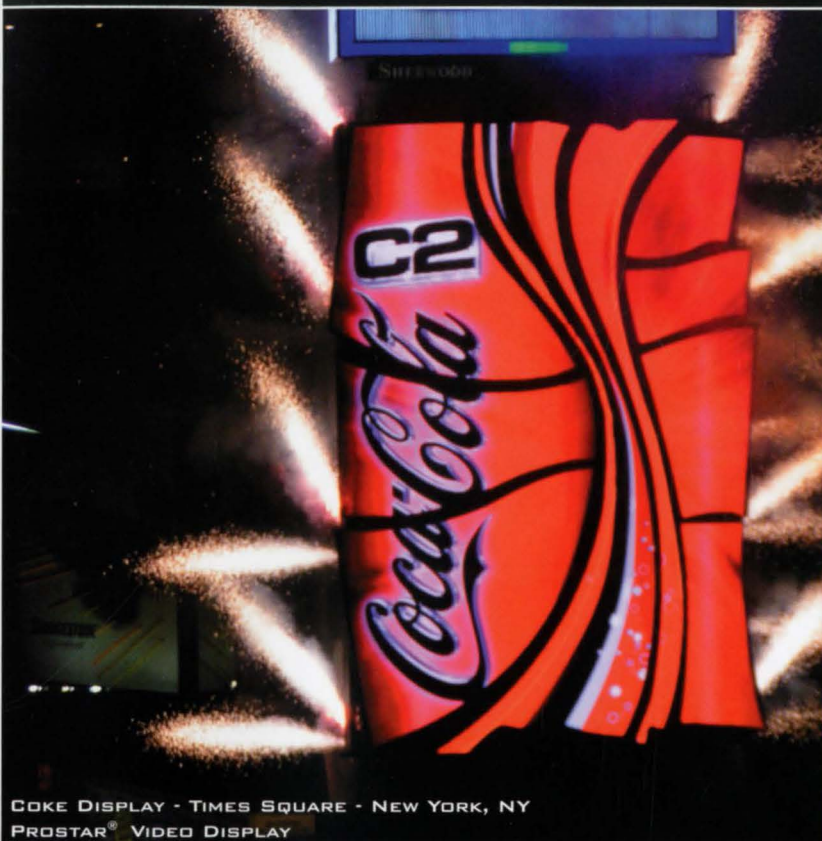


Those interested in contributing to a scholarship in honor of Junis Storry and/or Dennis Loban should contact Tim Reed at the SDSU Foundation, [tim.reed@sdstate.edu](mailto:tim.reed@sdstate.edu), 605-697-7475, or toll free 888-747-7378.

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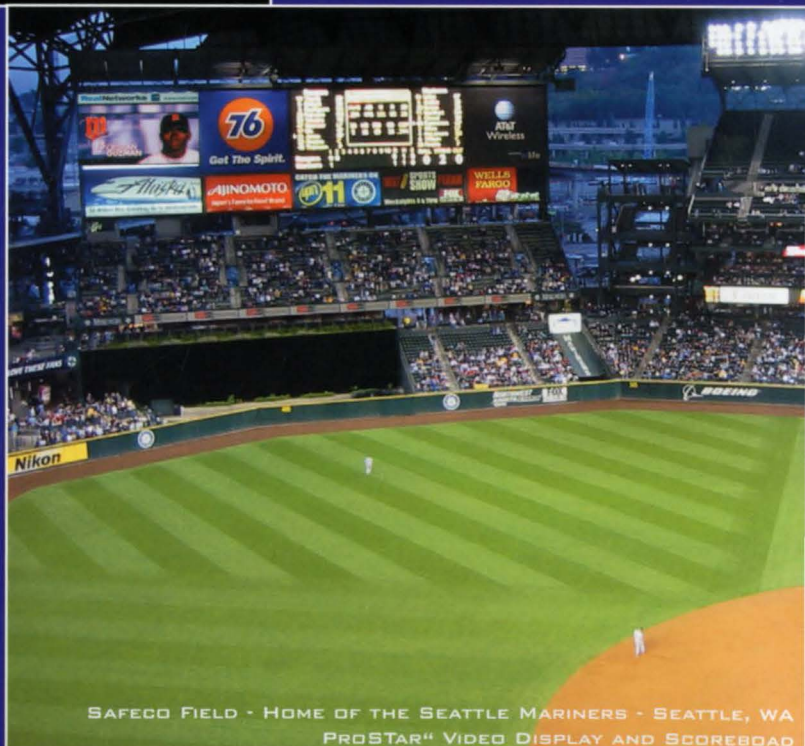
1999 graduate of SDSU  
College of Engineering

"Safeco Field opened in July 1999 and is one example of the many projects I've been fortunate to be involved with. As manager of the Seattle Daktronics Sales & Service office my participation began with service and account management, and later evolved into assisting in architectural design, equipment selection, bidding, and finally, installation of the equipment."



**Marlo Jones,**  
Northwest District Manager

1986 graduate of SDSU  
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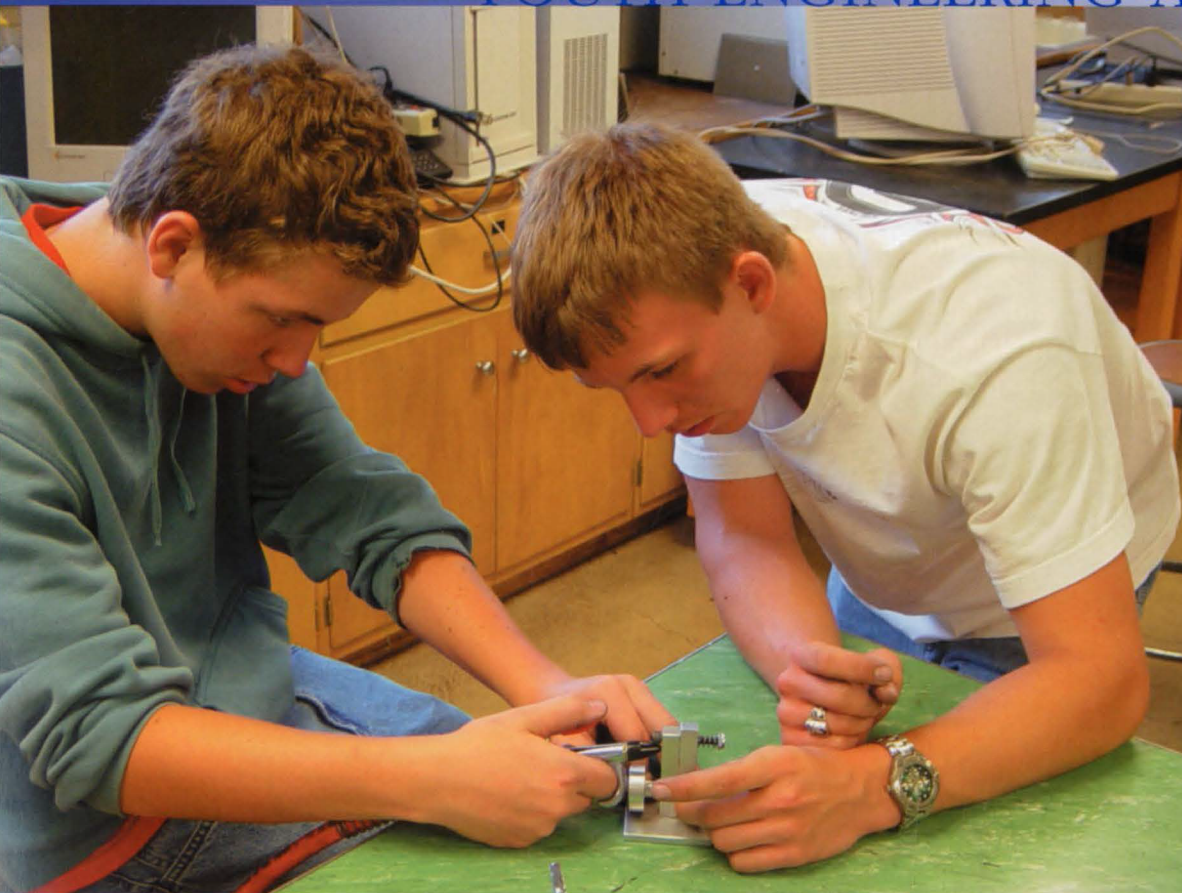


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## College of Engineering

### YOUTH ENGINEERING ADVENTURE



Youth Engineering Adventure participants complete an air motor in a lab at the week-long camp at SDSU June 13-17. This is the third year for SDSU to host the adventure, designed for high school sophomores and juniors. It attracted twenty-seven students, who undertook projects, learned engineering principles, and toured regional industries.

For information on next summer's camp, contact Professor Mylo A. Hellickson (605) 688-5610 [Mylo.Hellickson@sdstate.edu](mailto:Mylo.Hellickson@sdstate.edu)