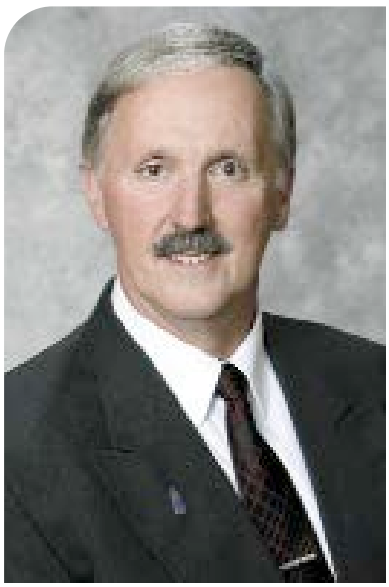
Impulse

Spring 2010

College of Engineering

South Dakota State University



Dear **ALUMNI AND FRIENDS,**

Another outstanding academic year is concluding for SDSU and the College of Engineering! This issue includes many interesting articles and news that will show you how 2009-2010 has been another exceptional year for our students and the institution.

What did you do on Hobo Day? I have fond memories of building a department float and participating in the parade! In this issue, you will see that we have rekindled that friendly student competition that has produced so many award-winning Hobo Day floats from the College of Engineering.

In last year's issue we had a feature article on the new Electrical Engineering & Computer Science Building. Read this issue to learn the latest developments as we expect to soon break ground on the second half of the new building!

Of course, we have many articles on our award-winning students and faculty. We also have feature stories that describe our growing activities in research, new academic programs, and profiles of some of our graduates.

It has been another year of great change for the College of Engineering and most of the changes have been very carefully formulated in our strategic planning. In this issue you will learn more about our strategic planning process and how it meshes with our campus-level strategic planning to ensure we are achieving our goals of high achievement and academic excellence.

I wonder how many of our graduates took courses from retired physics Professor George Duffy? At 89 years of age, it seems hard to believe he is still so active in his discipline! I hope you enjoy the article on Dr. Duffy and his most recently published textbook.

So, how did the 2010 Engineering Phonathon go? I hope you enjoyed a phone conversation with one of our many student callers this year. The annual Phonathon is a fun experience and of critical financial importance to our continued success. You can read about this year's Phonathon in this issue.

We also include several stories about our alumni in this issue. A particular highlight is the article featuring our 2010 Distinguished Engineers, Richard Hegg (BS AE 1967) and Francis "Fritz" Kub (BS EP 1972).

This is the annual issue where we highlight our donors; as you can see from the impressive list. I want to thank all of you for your generosity and encourage your continued support. If you are not already a member of our Dean's Club, please consider becoming one and help us continue to produce the best graduates in science, technology, engineering, and mathematics. Your generous financial support is part of the lifeblood of the College of Engineering.

I hope you enjoy this latest issue and will drop us a line or stop in for a visit if you're in our area. Remember, Jackrabbits are always welcome!

Lewis Brown, Ph.D.
Dean of Engineering

Better facilities equal brainier students

Investments in facilities has a direct correlation to the quality of students attracted to a university.

In the past decade, nearly $13.1 million has been invested by private donors in new and renovated buildings on the engineering quadrant. As a result, SDSU is more competitive in attracting scholars because they place a high premium on the quality of facilities where they will work and learn.

The following data on students ACT exams, taken before admission to college, shows how the investment is paying off in the increase in the number quality of students.

The College of Engineering has tracked strong enrollment gains, particularly among high-achieving students. An ACT score of thirty or higher (on a thirty-six-point scale) places a student in the top 4 percent nationally. From 2002 to 2007, the College of Engineering had admission requests from an average of 22.8 students whose ACT score was greater than thirty. In the past three years, the average jumped to 50.3, a 220 percent increase.

When offered a four-year renewable scholarship between $5,000 to $10,000, 90 percent of those high-ACT students chose SDSU. Our current comprehensive campaign, It Starts with STATE, has increased the amount of scholarship funds available, but more support is needed to successfully recruit this caliber of student.

The College of Engineering continues to improve and grow. As I write this column the University is expecting approval to build phase two of the Electrical Engineering and Computer Science building, which will add 43,000 square-feet of offices, classrooms, and laboratories. This project will be completely funded by private gifts.

Please consider a pledge to the It Starts with STATE Campaign to support scholarships and facilities for the College of Engineering.

Tim Reed

DIRECTOR OF DEVELOPMENT

CURRENT GIVING OPPORTUNITES IN THE COLLEGE OF ENGINEERING

- Electrical Engineering and Computer Science Phase II
- Junis Storry Endowed Scholarship
- Clayton Knofcynski Endowed Scholarship
- High ACT Scholarship Fund

Please contact Tim Reed at the SDSU Foundation (tim.reed@sdsufoundation.org or 888-747-7378) if you would like more information how you can help with scholarships and projects within the College of Engineering.

IMPULSE
is published each year by the Office of University Relations and the College of Engineering, South Dakota State University, Brookings, S.D. 57007.

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ABOUT THE COVER

Austin Schwan dresses up as Transformer character Bumble Bee as part of the 2009 Hobo Day parade entry by the Department of Mechanical Engineering. For more information on the students' renewed interest in float building, see story on page 4.

Hansons share spotlight,

job of helping engineering students

When it comes to Karin and Erik Hanson, it's best to expect the unexpected.

It's not often that a sophomore mechanical engineering major can be found at the head of the Pride of the Dakotas marching band. But that's where you'll find Karin who has spent one season as the band's drum major.

It's hard to peg a guy who lip-synchs his way to a sizeable charity donation in a "beauty" contest as a senior mechanical engineering major. But that's what Erik did in the Mr. SDSU Pageant.

The brother and sister from Sioux Falls both have musical backgrounds. Erik plays the clarinet. Karin plays the flute and the piccolo and she was a drum major for two years at Lincoln High School. They're both in the SDSU Symphonic Band.

With her drum major experience in high school, it was only natural for Karin to find herself stepping out in front of the Pride of the Dakotas. She says she likes the leadership that goes with being a drum major.

"I enjoy the music, too," she says.

Erik's brush with musical fame was for a good cause. Representing Mathews Hall, he joined the Mr. SDSU Pageant to raise money for the American Cancer Society's Relay for Life.

In the faux beauty pageant, contestants go through an interview, have a formalwear competition, answer a question from the judges, perform a lip-synch version of a song, and take part in a spirit skit.

For his lip-synch selection, Erik performed Journey's "Don't Stop Believin'."

"For my spirit skit, I pretended someone from NDSU had stolen my marching band uniform and broken my clarinet," Erik says. "I assembled my own uniform out of random things I had and asked the audience to sing 'Ring the Bell' with me."

As the winner of the competition, Erik's charity received all of the event's proceeds, about $800.

Working together at Mathews Hall

Not only do Karin and Erik share the same major, they also share the same job. Both of them serve as coordinators in the living-learning community for engineers on the third floor of Mathews Hall.

As the coordinators—Erik has the men's side and Karin the women's—the Hansons check in on engineering students to see how their studies are progressing, organize study groups, and arrange for tutoring.

"It's a good opportunity to meet and help younger engineering students," says Erik.

Karin likens the position to that of a dorm floor's community assistant except that the job's focus is on education.

Both agree that one of the toughest aspect of the job is getting students to admit that they need help.

"Freshmen sometimes feel that they don't need the help," Karin says. "It's kind of preventative."

For some brothers and sisters, going off to college would entail different dorms, different majors, and different jobs.

Asked how they get along at work, there's only a trace of sibling rivalry in Erik's response: "It's not too bad."

Not from an engineering family

While Erik and Karin are both mechanical engineering majors, they aren't carrying on a family tradition.

"We both just kind of enjoy it," Erik says.

As the older of the siblings, Erik set the engineering tone early as a youngster with hours spent building with Legos and taking pens apart to see how they worked.

"We broke many pens that way," says Karin, who smiles when she explains how she got into engineering. "He talked me into it," she says, indicating Erik.

Futures may include business, Disney World

As a senior, Erik is closing in on graduation. He says he'll take a hard look at the job market, but he's also considering staying in school to earn a master's degree in business administration.

"I want to start my own business someday," Erik says.

As for Karin, her dream job would be working with the animatronics at Disney World in Florida. She's serious enough about heading south that she has a double major in Spanish.

"A second language is definitely a must now-a-days," Karin says.

Dana Hess

Opposite page: Drum Major Karin Hanson energizes the Hobo Day parade crowd as the Pride of the Dakotas perform in the fall.

Above: Brother and sister Eric and Karin Hanson are mechanical engineering majors, but the Lincoln High School graduates are notable for their musical interests. They're both in the SDSU Symphonic Band and Karin was a drum major for the Pride of the Dakotas in the fall.

Reviving a tradition

Students practice engineering skills through Hobo Day float building

A revival afoot within the College is bringing the floats of yesteryear back to the Hobo Day parade.

The first to raise the bar three years ago were members of the Construction Management Club and mechanical engineering students. Last year, Alpha Omega Epsilon, a new engineering sorority, built a float with fraternity members of Sigma Phi Delta.

All the float builders say they hope to breathe some life back into the homecoming celebration.

"It would be great to bring some vitality back to the parade," says Ryan Richardson, president of the Construction Management Club.

And, he says, people are taking notice, which brings name recognition to the club and to the major.

"The Associates of General Contractors of South Dakota look for our float," he says. "We're affiliated with them as a student club. We're part of the National Association of Home Builders; they see it as a return on their investment.

> **"It's team spirit. They're building that feeling of belonging to a great group of people."**
>
> —Kurt Bassett, head of Mechanical Engineering

"Everyone was looking for construction management last year," he says. "Everyone knows who we are. It's also a way to give back to the community."

And for alums to get involved by donating money, equipment, and space.

Boom lift, spray foam

"It's amazing what you can get from donations if you go out and look for it," Richardson says. "Brookings Regional Building Association is one of our big sponsors. The rabbit (seen above) was mounted on a boom lift loaned to us by Bierschbach Equipment. We used a shop at Rounds Construction to build it. Gary Johnson, who has two sons in construction management, owns AGE Construction in Pierre; that's where the semi and trailer came from.

"Advanced Insulation Solutions sprayed the rabbit. The year before, we plastered the rabbit; we didn't want to do that again. So this year, we built it and Jack [Peterson, an alum and company owner] sprayed a layer of foam on it.

"It's sitting along the road by Advanced right now. That was Jack's payment. He wanted the rabbit."

Four campus groups sponsor the building of the Mechanical Engineering float: The American Society of Mechanical Engineers; the American Society of Heating, Refrigeration and Air-conditioning Engineers; the Society of Automotive Engineers; and Pi Tau Sigma honor society.

"Most of us overlap," explains David Schiller, senior mechanical engineering major. "I'm in two of the three and in the honor society. We split the fund-raising into all four groups."

Daktronics is a major partner, Schiller says. They provide lumber, the digital, streaming ads, software, and the sound system.

The mechanical engineering students have built their float in a small storage shed at Habitat for Humanity, in Quonsets out by the horse unit, and in the heat and power lab by the motor pool.

School spirit

Schiller, like Richardson, will graduate in May, so he's passing the float building on to those coming up through the ranks.

"We've been trying to bring younger students in," Schiller says, "welcome them in and get them involved, bring the spirit level up."

Last year, students costumed as Transformers walked the parade route alongside the Mechanical Engineering float, a fifty-two-foot long scale model of the Wellness Center. Mechanical engineering senior Bill Bruns was driving.

"I could see kids running up to Bumble Bee or Jet Fire, slapping hands and high fivin'," Bruns says. "I had friends in the crowd who said their kids couldn't stop talking about it."

The costumes were all handmade out of "cardboard and a lot of hot glue," Schiller says, and entailed an estimated 200 hours to complete—outside of the 500 or so hours it took to build the float itself.

Departments help out with funding, and faculty are supportive, even encouraging the friendly rivalry that has a trophy traveling between Construction Management and Mechanical Engineering.

"There was a bet between our two department heads that whoever won last year had to pay for the traveling trophy," Schiller says, adding. "We split it."

Pat Pannell, coordinator of the Construction Management Program, is a University of Florida graduate. But he's heard about Hobo Days past, when all roads leading into Brookings were clogged with people.

"I think it's coming back," Pannell says. "The school spirit is the thing you want to develop. It takes an effort for the whole campus to create that atmosphere. If you get students involved while they're here, they're more likely to stay involved as alums."

Kurt Bassett, a 1981 ag engineering graduate and head of Mechanical Engineering, recalls his float-building days as a member of the student chapter of the American Society of Ag Engineers.

"The group always had a float," he recalls. "It was pretty common. Everybody had to put something into the parade."

Engineers have an advantage, Bassett says, because they have access to equipment and the knowledge to build a big, moving float.

"They're using engineering creativity," he says. "They're building these automated, huge structures that have to hold up. They have to know something about the design of that kind of project."

And while they're at it, they're having some plain old great big fun.

"It's team spirit," Bassett says. "They're building that feeling of belonging to a great group of people."

Cindy Rickeman

Opposite page: A group of Transformers gather by the Mechanical Engineering Department before the start of the 2009 Hobo Day parade.
Above: A boom-mounted jackrabbit dominates the Construction Management Program's "SuperJacks" float in 2009.

Softball & engineering
run deep for State-rooted Postmas

While other families in the neighborhood spent weekends camping, the Postma contingent journeyed the country for softball.

Bud Postma, wife, Kelly, and daughters Brittany, Brooke, and Brianna were usually seen loading up the car for another road trip to watch and cheer Bud and his softball team, the Sioux Falls Chiefs.

For twenty-four years he did it, traveling to places such as Salt Lake City and Victoria, British Columbia.

The second baseman sparked the Chiefs to

six American Softball Association national tournament appearances, placing as high as third two times, while twice earning all-America honors.

During his career, the Chiefs made four trips to the International Softball Congress World Tournament, competing against some of the best teams assembled in the world.

Softball became a passion for the Postma girls as well as making the SDSU education experience a family affair.

Bud and Kelly are 1986 State graduates with degrees in ag education/animal science and public recreation, respectively. Bud went straight to Madison High School, first as an ag teacher for nineteen years and now in his fifth year as the school's activities director and assistant principal.

Twins Brittany and Brooke are December 2009 engineering graduates.

Brittany earned a degree in math education and is a graduate assistant coach in the softball program at Dakota State University in Madison pursing a master's degree in educational technology.

Brooke received a degree in a civil engineering and is enrolled in the College's graduate program seeking a master's degree in civil engineering.

Last, but certainly not least, is Brianna, a freshman math education major.

Meeting demanding schedule

In addition to the math/engineering curriculum, the twins, who earned twenty-two high school varsity letters apiece, were also recruited to play softball for the Jackrabbits—a demanding schedule they met with a good deal of success.

Brittany was named to the all-Summit League first team and was a National All-American Strength and Conditioning Athlete. Brooke was a two-time all-Summit League selection. They both played against the USA Olympic softball team in Rapid City in July 2008.

"I'm really proud of them, especially with the move to Division I, and all the traveling they have to do," says Bud, a three-time national qualifier as a Jackrabbit wrestler. "Graduating in the engineering field, while competing in a sport, basically from February to May, is no easy task; you're going nonstop."

The girls were always well grounded and conscientious, according to Kelly, citing their help around the house, lifeguards at the local pool, and work study students in the SDSU equipment room.

"They are very good at managing their time with school, softball, and having jobs," she says. "Bud and I are extremely proud of them."

Kelly was a softball player herself, but admits the daughters' interest in the sport came from their father. "They definitely got it from Bud," she notes. "They grew up watching him play all over the country."

"It was huge," points out Brittany of her dad's influence. "We spent many weekends watching him play. We would get quarters for chasing down foul balls and even home run balls."

Expertise comes early

What all the exposure did was give the Postmas an intangible advantage over other college recruits.

"We were very exposed and very knowledgeable about the game when we were little," relates Brittany, the eldest of the sisters being all of two minutes older than Brooke.

Says Brooke, "Brittany and I sat and learned how to keep the scorebook while watching him play. The whole thing was a neat experience, meeting different people, and seeing some awesome games."

For Brianna, who notched eleven high school varsity letters, it was a win-win situation in terms of influence. "Watching dad made me want to play," she says. "I loved it, and it was fun getting to know the game. But just watching my sisters and how well they liked it was also a big influence."

Bud, who earned a master's degree in administration from SDSU in 2003, is somewhat modest when discussing his impact.

"My time in softball probably did help because they were at my games growing up and enjoyed it," says Postma, who, not surprisingly, was their high school softball coach. "They were multiple sport athletes, but softball was their love."

Classroom influence

Softball wasn't the only common bond for the Postma sisters; they also shared a strong liking for numbers—a mutual interest rooted through Madison High School math teacher Bill Thurow.

"They got a great upbringing in math and I attribute that to him," cites Kelly. "They really enjoyed him."

Brianna agrees totally, observing, "He is amazing, just his style, everything," she says. "He made us want to go to school."

Thurow, in his twenty-fifth year teaching, knows good students when he sees them.

"I'm not the greatest [teacher] in the world, but when kids have a drive to be successful and are willing to take advantage of what's given to them, they are bound to do well," he says. "The good ones take advantage of our expertise and these girls did.

"They are very motivated, driven, and appreciate the time and effort teachers spend on them," adds Thurow.

Bud Postma shares, "It's so gratifying to see they went to SDSU considering Kelly and I are graduates and big fans. To compete at such a high level, and more importantly excel in the academic arena, makes for very proud parents."

Kyle Johnson

> **"Graduating in the engineering field, while competing in a sport, basically from February to May, is no easy task; you're going nonstop."**
>
> — Bud Postma.

Opposite page: Softball sisters, from left, Brittany, Brianna, and Brooke Postma.
Left: The Postma clan—Brittany, Brooke, Kelly, Bud, and Brianna.

'Scrambler'
helps launch brothers into Expo leadership

Like many budding engineers, as youngsters Darin and Derek Waldner spent long hours in the family garage in Webster taking things apart.

Sometimes it was a struggle to rebuild the object of that night's curiosity.

Dad got really tired of us tearing stuff apart," recalls Derek.

Their energies were rechanneled from dismantling to building when older sibling Darin was introduced to the Engineering Expo. Darin excelled in the competition for high school students, which provides specifications for student-made projects.

Darin recalls fondly his version of "The Scrambler," a device designed for launching a grade A egg at a target twenty-five feet away.

"We overbuilt it," Darin admits, explaining that the laser sight allowed him to fire eggs all over the HPER Center.

He describes his version of the "Hill Climber," a vehicle designed to climb a ramp under its own power, as a "pretty cool little robot." Cool enough, in fact, to beat out college-age competitors for the Expo's top prize.

Derek followed the eggshell-strewn path marked by his brother, building a "Photovoltaic Cannon" designed to use solar energy to fire a ping-pong ball.

"We got deep into this before we ever got to Brookings to go to college," Darin says. "This is what got me here."

Stepping into leadership

Once they got to campus, the Expo was a natural event for the Waldners to work on. This year Darin, a senior in mechanical engineering, and Derek, an electrical engineering junior, are serving as the directors of the Engineering Expo.

In its thirty-sixth year, the Expo attracts student teams from about forty high schools in South Dakota, Minnesota, Nebraska, North Dakota, and Iowa. At the Expo, students can compete in a Physics Bowl, bridge building, and seven other projects. The Waldner's favorites, like The

Scrambler and the Photovoltaic Cannon, are still part of the competition.

The Expo is also a venue for SDSU engineering students to show off their projects and have them critiqued by fourteen judges from industry.

Moving locations

"We pack the HPER Center," Darin says. "We've kind of run out of space."

Because the facility has been so jam-packed in the past, Darin explains that some of the larger projects created by SDSU students can't always get the display space they need. That's why this year's Expo will break tradition and be held at the Swiftel Center.

"We'd love to stay on campus," Darin says, "but there's room for everything at Swiftel."

Once they solved the space problem, the Waldners had to overcome the logistical challenge of holding the College of Engineering's largest recruiting event off campus.

The Waldners have arranged tours of the College of Engineering for the high school competitors with transportation to the campus and back to the Swiftel Center provided by the Brookings Area Transit Authority.

It takes a College

While the Waldners are leading the effort, putting on the Expo involves the entire College. Student engineering organizations each take on one of the building projects, acting as judges for the event.

"We've had no problems," Derek says of the help from student organizations. "They've stepped right up with us."

A few months before the April 23 Expo, a committee of about twenty-five people will begin meeting every other week to plan. Closer to the event, the meetings will be held weekly.

And, once it's over, the planning for the next year starts right away. Darin recalls that it was just a week after the 2009 Expo when he met with officials from the Swiftel Center to make arrangements for this year's event.

"We had the arrangements made to move it to Swiftel before we left Brookings for the summer," Darin says.

Derek Waldner

Darin Waldner

Eagle Scouts and engineers

Taking on big projects is nothing new for the Waldners. They're both Eagle Scouts.

For his Eagle Scout project, Derek built dugouts for Webster's new ball field complex. For his project, Darin built two 150-foot cedar privacy fences adjacent to the high school's new parking lot.

They found that the Eagle Scout projects were good experience for engineering because, as the project leaders, they were called on to track the costs, hours, and building plans.

"It's really a big documentation thing," Derek says. "You're not necessarily supposed to help in the building."

A future together?

The brothers are looking forward to engineering careers after college. It's too soon for Derek to say where his path will lead, but he's amenable to the idea of working with his brother again.

"I don't see why not," Derek says, noting that they seem to have complimented each other during their work on the Expo. "He designs the mechanical end and I take care of the electronics."

Darin agrees: "There's not much head-butting. We've got a pretty good cover on everything."

Darin's plans for the future are flexible, too, though he was impressed by his semester-long internship working in testing at Bobcat Equipment. That made him think he'd like to work in testing and analysis.

"It's a lot of fun breaking stuff," Darin says. Just like he was as a teenager in his father's garage, Darin likes to see how things come apart. "I'm a curious guy."

Dana Hess

ENGINEERING EXPO FACTS

Date: Friday, April 23, 2010
Hours: Registration at 8 a.m., awards presentation at 2:30 p.m.
Location: Swiftel Center, Brookings, South Dakota
Admission: Free
Special attraction: Professor Larry Browning's "Wonders of Science"
Tours: College of Engineering with transportation provided by the Brookings Area Transit Authority
Events: Physics Bowl, Human Wallpaper, Hill Climber, The Scrambler, Photovoltaic Cannon, Rocket Car II, Impromptu Design, Programming Competition, and Bridge Builder
Prizes: First place $60, second place $40, and third place $20. Physics Bowl also pays $15 for fourth place and $10 for fifth place.
Questions: Call 605-688-4161, e-mail SDSU_EXPO@hotmail.com or go to **http://www.sdstate.edu/engr/camps/expo/index.cfm**

Study abroad

Students connect, compare, care

Above: Brittni Stephens signals that the lava from a volcano in Antigua is just the right temperature for roasting marshmallows. **Opposite page, from top to bottom:** Gothic architecture of the Kolner Dom church in Cologne, Germany. Kristin Wiles hikes in National Park Eifel by Heimbach, Germany. Lindsey Reid, right, poses with fellow SDSU student Mollie Turbak at the Eiffel Tower in Paris.

One summer day nearly two years ago, Brittni Stephens roasted a marshmallow over a volcano and knew she wasn't in South Dakota anymore.

The senior civil engineering and Spanish major was in Guatemala, where she and eighteen other students from the Modern Languages Department spent a month teaching English to local elementary students. They also had their own studying to do.

"We went to school four to five hours a day," Stephens says. "We each had a one-on-one teacher. Mine was Carlos. He was a salsa dance teacher too. We made a great connection. I still talk to him now.

"On weekends, we would travel. In Antigua, I climbed three volcanoes. One was live and I roasted a marshmallow over the lava."

In January 2009, Stephens spent two weeks in Nogales, Mexico, on a service-learning project to study immigration policies. She listened to personal stories, talked to police organizations, worked with the children, and stayed with a local family.

"There were eight of us in a very small, two-room house," Stephens says. "There were three of us in one room. Another five slept in two bunk beds.

"I loved them so much. They were so high-spirited and great."

Her most personally influential trip, however, was to Haiti, where for two weeks in May 2009, she helped the people there build a compost latrine. And figured out what she wants to do with her life.

"Water is so necessary for anyone to survive and realizing these children are dying because they

"Water is so necessary for anyone to survive and realizing these children are dying because they don't have any water was a really hard thing for me to see."

—Student Brittni Stephens, speaking of her time in Haiti

don't have any water was a really hard thing for me to see," says Stephens, who has begun graduate classes for environmental engineering. "These kids just really touched my heart."

Two other engineering students who have recently studied abroad are Kristin Wiles and Lindsey Reid.

Lessons from Germany

Wiles, a junior civil engineering and German major, spent the spring 2009 semester in Dortmund, Germany, through the International Student Exchange Program. She stayed in university housing, where she discovered that Germans are quite protective of their personal space.

"People in Germany are all about their boundaries," she says. "They think two people sharing a dorm room is just awful."

Their ketchup is spicier than in America, they like mayo on their French fries, and beer is relatively cheap.

"You could buy a half liter of beer for a euro or two, but if you wanted soda, it comes in a small glass and costs three euro," Wiles says. "Water was more like carbonated water and more expensive than beer also."

The train pass that came with her tuition enabled Wiles to do some traveling and complete an intensive program on the area's museums and breweries, which was part of her education there along with her courses in German writing and conversation.

Life in London

Reid, a senior math major, had an unexpected, grown-up lesson during the fall 2008 semester, when she attended school in London through the College Consortium for International Studies.

"It's pretty hard to find peanut butter over there," Reid says. "When we finally did find where it was in the store, there were two cans sitting there. They make peanut butter and jelly for their little preschool kids. It's not something you eat when you grow up."

Reid rented a room from a local family while studying statistics, social nutrition, and British culture at Kingston University. There, classes were longer but met more infrequently than in the United States and all students, even math majors, do a considerable amount of writing.

She also found herself answering plenty of questions about home.

"When people heard we were from America, that's all they wanted to talk about," she says. "Much of their perceptions are based on reality TV shows. They're curious."

Cindy Rickeman

A Plan

The College has a plan to address strategic issues

A strategic plan. What might be a deep-sounding subject for some is a mighty important topic for the College and for the University as a whole.

In previous years lofty plans sometimes met their fate being stashed away on a shelf or in someone's file. However, things turned serious shortly after David Chicoine was named SDSU president in 2007.

After engaging the entire campus and off-campus stakeholders for most of the year, he issued a charge to each college on campus to develop a strategic plan with the theme of achieving national distinction while strengthening local relevance.

"We are expected to develop real plans with measureable outcomes," says Dean Lewis Brown. "What is it we want to become as a College of Engineering?

"This is a grassroots strategic plan, and that means people really setting targets where they want to be, and identifying incremental steps to get there," he adds.

The strategic plan began ticking in 2009 and runs through 2013—a five-year time frame that contains four specific strategic goals:

- Enhance academic excellence through continuous improvement of undergraduate and graduate learning, advising, and practical experience.
- Grow externally funded research and scholarly work by at least 10 percent per year while expanding contributions to South Dakota's economy.
- Expand the level of effective communication with constituents.
- Establish facilities and sustaining resources necessary to meet changing needs for high achievement.

How to achieve success

To reach the goals, a series of checks and balances have been put in place to measure each goal's viability.

Tracking trends such as enrollments, research dollars, scholarships, faculty hirings, faculty grants, published articles, and scholarly presentations are areas the College will be closely watching.

"We have goals of where we want to be and steps we have to take in order to get there," says Brown. "All that rolls together and makes a plan. We also have things we can monitor and measure to see that we are making progress."

For example, under academic excellence, part of the goal refers to attracting more high-performing students to the College, which can be accomplished by growing scholarships that target students with high ACT scores.

"Five years from now we will be able to measure and see if we were successful if the number of students who were high performing has increased," explains Brown, while also stressing the need for more doctorate and master's programs. "We will monitor the number of students enrolling and the number of new scholarships."

The same thought pattern can be applied to the other three goals as well, Brown says.

"To grow research the right facilities are needed, and you have to have attractive financial and resource startup plans to bring in good researchers," he points out.

"We measure how many grants they apply for and how many papers they publish," he adds. "We can use them to measure bottom-line success."

Focusing on yearly needs

According to internal study reports, complete success of the strategic plan will not come without the investment of significantly new and redirected resources. They include:

- Fifteen-and-one-half new full-time equivalents in personnel.
- $3.5 million in one-time funds plus $2.45 million in recurring base funds.
- $23 million to address facility needs.

The College's strategic plan isn't set in concrete. Rather, it's a five-year window designed to be left open, because, as Brown observes, "things come up and things happen" on a yearly basis like changing events in the economy or actions by the state legislature.

For that reason, each college has adopted an operating plan, a one-year time period with its own specific goals.

"The five-year plan can be refreshed every year or so," says Brown, "but what are the big goals we want to achieve for this year? We bite off these ones and really focus time and energy on them."

The College's operating plan for 2010 includes such items as:

- Accreditation renewals for electrical engineering, mechanical engineering, civil engineering, and agricultural and biosystems engineering.
- First time accreditation for the new software engineering program.
- Developing new marketing ideas for engineering programs.

> **"We are living, breathing, and operating in a strategic planning environment. That's the way business is done on this campus."**
>
> — Dean Lewis Brown

• Securing funds to build the west half addition of the Electrical Engineering and Computer Science Building.
• Completing an agreement for a $1 million endowed professorship.
• Growing scholarships to attract high-performing students.

We have a plan

With the College in its second year operating under the strategic plan, Brown spent February busily preparing a detailed midyear progress report to the president on how the College was doing.

"It is a lot of work," he concedes. "But to me, strategic planning and implementation is very exciting work if taken seriously."

Brown emphasizes the most important thing for people to realize is that the College does have a plan to address its strategic issues and contribute to the success of SDSU in creating a better South Dakota.

"I think the real message we want people to have is there are a lot of institutions that don't have effective strategic plans," he says. "We could have said that years ago, but now, we are living, breathing, and operating in a strategic planning environment. That's the way business is done on this campus."

Kyle Johnson

GRANTS & CONTRACTS

	FY2007	FY2008	FY2009	Change
# Proposals	67	79	113	34
$ Proposals	$12,735,279	$49,780,395	$29,003,011	-$20,777,384
# Awards	48	54	45	-9
$ Awards	$2,837,610	$4,573,280	$12,158,847	$7,585,567
FY Expenditures	$2,910,383	$3,659,994	$6,208,830	$2,548,836

NEW SCHOLARSHIPS INITIATED

	CY2007	CY2008	CY2009	Change
Total-College	9	15	46	31

SDSU FOUNDATION GIFTS & PAYMENTS

	CY2007	CY2008	CY2009	Change
Gifts	$1,589,881	$2,772,395	$3,532,765	$760,370

NEW PROGRAMS APPROVED:

CY2009 Ph.D. in Physics, Dec. 18, 2009 (contingent on FY11 SD appropriated funds)
CY2009 MS in Electrical Engineering, Dec. 18, 2009
CY2009 Minor in Nuclear Engineering, Oct. 14, 2009
CY2009 Minor in Informatics, April 3, 2009
CY2008 MS in Physics - Dec., 2008
CY2007 Minor in Statistics, Dec. 13, 2007
CY2007 MS in Statistics, Dec. 13, 2007

ASCE
ACHIEVEMENTS

ASCE CHAPTER AGAIN DOMINATES ITS CIVIL ENGINEERING PEERS

Whether it is the Yankees, the Packers, or the Lakers, it seems like dynasties eventually fade.

However, there is no sign that the SDSU chapter of the American Society of Civil Engineers is faltering. The club was honored in 2009 with the Region 7 Governor's Award, the eleventh straight year for that award or the Ridgway Award.

In 1999 and 2003, the chapter won the Ridgway, which goes to the nation's top chapter. In 2009, with 269 chapters nationwide, SDSU was one of eight finalists for the award.

So what keeps SDSU ahead of the other twenty-one chapters in its region, which covers South Dakota, Wyoming, Nebraska, Iowa, Colorado, Kansas, and Missouri?

"We've got programs that work and we continue to find strong office leaders," according to Richard Reid, assistant dean and advisor of the 120-member chapter.

He added, "We also try new things each year. We continue to do the requirements each year and participate in conferences and contests. Plus we have good support from the institution in the form of finances, space for meetings, and excused absences for going to meetings."

Biggest asset? Leadership

But if the strengths could be summed up in a word it would be leadership.

"Chuck Tiltrum was the advisor for twenty-odd years and he was pretty involved at the national level. Now I'm on a national board. You learn a lot about what you need to do. Then we've just had some great [student] presidents," Reid says.

The latest in the list of presidents is Krista May, who took office in January.

She followed Brittni Stephens, who served in 2009 with Jeanna Schierholz (vice president), Tom Low (treasurer), Steph Peters (recording secretary), and Derek Matthies (corresponding secretary).

Their leadership will be evaluated when the 2010 awards are announced late this summer.

Reid says it's an annual goal of the chapter to win the Governor's Award. "We've seen what it takes to succeed. The students don't know anything different. They just think this is how we do engineering here."

Part of that formula includes community service, relevant programming, and guest speakers.

Dollars equal opportunities

One major change in the chapter is finances.

The Ice Breaker Reception at the Kansas City Marriott's lobby bar was a great place to mingle and meet new people, all sharing a common interest in civil engineering.

Opposite page: SDSU students Brook Postma, left, and Stephanie Peters, center, meet Heather Weed of the University of Kansas.

Left: Jackrabbit guys dressed for the occasion are, from left, Brent Krohn, Eric Amundson, Brandon Mattison, Trevor Pence, and Joe Schroder.

Photos by David Hathcox for ASCE

Members have "done a better job in finding money," Reid says. "We're more aggressive in soliciting money. We have the golf tournament, raffles, and the phonathon. Fifteen years ago they weren't nearly as diverse in fund-raising.

"For the last two years we've sent twenty-two students to the national conference. Before we could send half a dozen."

Bringing down the barrier to participate in national events means students only have had to pay $50 to $200 to fly to conventions in Pittsburgh and Kansas City and stay in a hotel, Reid explains.

This year will test students' commitment to ASCE; the national convention is on Hobo Day weekend in Las Vegas.

Dave Graves

NATIONAL IMPACT REFLECTED IN INDIVIDUAL ASCE HONORS

The awards garnered by SDSU's American Society of Civil Engineers don't stop at the chapter level.

Three individuals cited for honors by the national organization are Richard Reid, Chuck Tiltrum, and Stephanie Peters.

Reid, chapter advisor since 2006, again received the Region 7 certificate of commendation that he received in 2008 for his work as advisor. Reid, who also serves as the College's assistant dean, is noted for taking a personal interest in students.

In addition to guiding the chapter, Reid serves on the national ASCE Committee for Student Affairs, which works with all the ASCE chapters in the country as well as internationally.

The committee puts on training, evaluates the national reports, and represents students to the parent ASCE organization.

Tiltrum, who preceded Reid as advisor, was the 2009 winner in Region 7 for the practitioner of the year. Tiltrum, who has retired from SDSU but maintains a practice as a private surveyor, continues to provide professional guidance to students in the Civil Engineering Department.

Peters, who will graduate in May, was awarded a national ASCE scholarship for the current school year.

The Nerstrand, Minnesota, civil engineering major received the $3,000 Samuel Fletcher Tapman Scholarship, which is based on ASCE activities, academic achievements, letters of recommendation, and a personal essay on her decision to become a civil engineer.

Only six of the scholarships are granted annually. The award didn't surprise Reid. "When we get kids that apply, they usually do pretty well," he says.

Department Head **Bruce Berdanier** adds, "Stephanie is a phenomenal student and an active leader in several professional and honorary societies on campus."

Berdanier has a good feel for civil engineering students around the nation. He is completing a three-year term on the ASCE Committee on Scholarship, which meets annually in March to award ASCE scholarships. He began his term as a faculty member at Ohio Northern when he was invited by Tiltrum to serve. If possible, he would like to serve again after his current term expires in October.

Dave Graves

Richard Reid

Chuck Tiltrum

Stephanie Peters

Paudel's success essay

Nepal student to be published in spring Society of Women Engineers issue

In 1975, Bob Seger made a hit by singing about going to Katmandu.

In 2010, Shradha Paudel made a winning impression with contest judges in telling her educational journey from Katmandu.

Paudel, a civil engineering senior, finished third overall in a competition sponsored by the Society of Women Engineers asking professionals and students to "Define Your Own Success" in a variety of mediums, including video, essays, and poems.

Paudel had the second-place essay, and it is being published in the spring issue of the *Society of Women Engineers* magazine, a 20,000-circulation publication.

The success that Paudel has experienced in her three years at State is remarkable.

After transferring here from Oklahoma State, Paudel has been involved in the Society of Women Engineers and the American Society of Civil Engineers as well as being one of sixty members of the Nepalese Student Association. Her drive to find success through an American education is detailed in her essay.

Large selections of her essay follow.

Shradha Paudel determines the uncompacted void content of fine aggregate in the Crothers Engineering Hall Bituminous Materials Lab. The senior from Katmandu, Nepal, has truly defined her own success and has an award-winning essay to prove it.

"Take care, Nanu, and call us every time you have a transit in between. Fly safe and take care of your belongings!" my mom said. I left them and headed towards the terminal. My mother was trying to hide her tears with a smile. I still remember my eight-year-old brother, who was looking at me with his nose pressed against the glass that separated the passengers from other people.

I sat in the chair waiting for my flight. Different thoughts strolled in my mind. I had to change flights around six times. I was worried if I would miss one. I was nervous, but I was proud. I was traveling alone across the world and going somewhere exactly in the opposite place from where I was then.

I sat there wondering how the US might be. I thought it had huge buildings and big cities everywhere. I was born in a poor country, and sometimes I felt I would not be able to keep up with the technology in America. When I was thinking, my flight was announced. I was first flying to Bangkok, Thailand.

The flight attendant closed the door, and we were ready for the flight.

Then suddenly a cold feeling ran through me. I felt I was a bird who had been separated from her mother and taken to a place far away. I remembered my family, my dog, my neighbors, possibly everybody I knew. Tears filled my eyes. I cried for a long time, covering my face with the newspaper. I was leaving everything behind. I did not know when I was coming back home. I was flying to a place where I knew nobody.

Experiencing flush toilets

After three hours, my flight reached Bangkok. Seeing Bangkok from the plane was wonderful.

The whole city looked artistic with the pagoda style buildings. My flight landed in Bangkok. I had a layover of three hours and after that I had a flight to Hong Kong. I was surprised to see the rest rooms. Man!! The toilet automatically flushed. I had never seen such restrooms in my life. I felt there was a person hiding somewhere and he was the one who flushed when he knew that I was done. I was embarrassed. To tell the truth I sat in one of the couches in the lounge outside the restroom wondering about an hour how the toilet worked.

While I was sitting there, missing home, two girls settled down beside me. "Where are you

going?" one of the girls suddenly burst out. "I am going to the US for my studies," I replied.

"Good!! You must be a smart kid. Your parents must be really proud of you," they said.

I just nodded and smiled. They are certainly proud of me I thought. Getting a visa to the US is a big deal, a lot of categories have to be qualified, including good grades, financial condition, and family source of income.

We need to go through each of them. Many people do not make it and those who make it are considered lucky. The reason is that people make a lot of money when they graduate from American universities and they are qualified to get a job around the world. When I got a visa to the US, I not only fulfilled my dream but even my parents' dream.

Overcoming being a girl

I was born eight years after my parents got married. Those eight years were not easy for my mom. She always worried that my grandparents would arrange for my dad's marriage somewhere else. All the members of the family blamed her for not being able to bear a child.

[Then] I was born. My parents were happy but not my grandpa. When my aunties were excited about my birth, my grandpa exclaimed in disappointment, "Why are you so happy? After all, it is a daughter and there is nothing to be excited about."

My aunties told about my grandpa's comment later as a joke, which always inspired me. I wanted to prove to him that I could do anything that his grandson would have done.

Then my two sisters were born. This was a big disappointment to all my relatives, neighbors and my grandparents. They had a stereotype thinking that we would run away and get married, which is considered a taboo in my society. They thought we would just give the family a bad name.

When my dad came to the capital [Katmandu] for work, people would say, "Why do you need to make so much money? You will have to spend all these money in your daughter's wedding giving them dowry." My parents said nothing but were determined that they would give us good education.

'We will . . . fulfill your dreams'

My mom used to cry sometimes. "Don't worry mamu, we will study well and fulfill your dreams." This was what I always told her. We understood their feelings, and we worked the way they wanted. These thoughts were just wandering in my mind when my flight to Hong Kong was announced.

The Paudel children gather before Shradha leaves in August 2005 for the United States to get a college education. From left are Sadhana, then age 15; Bigyan, 8; Sangam, 13; and Shradha, 18.

After four hours, my flight landed in Hong Kong.

I was surprised to see the airport. It was really huge. I had to walk like an hour to get to my terminal. They had big malls in the airport, food stalls. I did not buy anything. I converted everything in my currency and it turned out to be expensive. So I ate the snacks I had in my handbag.

Everything was so colorful and bright. I felt sad that my country did not have any of these things. I remembered my family and wished they were here with me to see the wonderful things around. They had computers in the airport with the Internet connection. So I e-mailed my parents telling that I was safe and after an hour I would be flying to Los Angeles.

Again it was time for another flight. However, this time I was excited, as it would take me to the US.

Alcohol, LA, ATMs

It was a thirteen-hour flight. It was dark outside, and we were flying up above the clouds. We were served food and people drank beer and wine. As I was never exposed to alcohol that close before, the smell made me sick. I tried to sleep. Finally, thirteen hours ended, and my flight was to land within 15 minutes. It was evening in LA. I could see the huge city. It was so bright. I was like WOW!

I took a deep breath in. I was in the US. Everything felt nice and wonderful. I was surprised to see the door opening at the press of the button. Everything impressed me. The vending machine, the ATM, I wondered how these things would work. I thought there would be people hiding behind and they were the ones who were passing the snacks and the money.

Then I flew to Dallas and then to Oklahoma. I was surprised when the city turned into plain flatlands with nothing on them. This was not what I thought US would be like. After thirty-nine hours, I landed in Oklahoma.

It seems like yesterday but it has been four years since I came to the USA. The first three months were not easy but slowly everything went okay. The decision that I took at one moment of my life made me an entirely different person. I have spent four years. After a year I am going to graduate as a civil engineer. I am involved in different organizations in school, and when I get an opportunity to attend the seminars and when I see myself in between all these talented people I feel really proud of myself.

Grandpa's proud now

I am a very confident person now and I know I can do anything in any parts of the world.

Not to mention my grandpa is very proud of me. He talks proudly about me in any social gathering. He says, "My granddaughter is studying a guy's major [engineering] in the US."

My grandpa who was embarrassed once upon a time because a daughter was born in his family is [now] very proud of me and talks about me wherever he goes.

My parents are respected and not looked down upon anymore. This is what a real success is for me.

Editor's note: Future success for Paudel involves finding work in the United States as a transportation engineer, helping to pay back her parents, and pay off school loans before enrolling in graduate school.

Her parents are principals at a university and a high school.

Paudel is the oldest of four children. One sister studies engineering in Australia. Another sister is in a Nepal medical school. Her brother is in high school.

Shradha Paudel's only visit to her homeland since coming to America was in December 2008. She found her country had "changed a lot. Everyone had cell phones and there were ATMs."

She adds that she finds SDSU to be a friendlier place than her first college home at Oklahoma State. Paudel has no desire to return permanently to Nepal.

Senior Design

Aerospace exec shares 'steps for success'

Engineering students attending the 2009 edition of the Senior Design Conference heard real-world advice from a real-world success story.

The annual conference is a forum where seniors showcase their posters with designs that address today's engineering problems.

The event not only gives seniors hands-on design experience, it also highlights team and communications skills necessary for the next graduating class of engineers and technologists.

Doug Daniels, a 1993 SDSU electrical engineering graduate, knows something about what his successors in the audience will soon be facing.

However, he indicates his presentation, Ten Simple Steps for Success in the Technical Work Place, shouldn't be viewed as a startling scientific discovery.

"It isn't a secret, and it's not a long laundry list of impossible goals or objectives," he tells the students. "Some of what it takes, you already know. For example, the outstanding education you're receiving from SDSU will help shape and define your successful future.

"My goal today is to describe for you how to be successful, and I'm also going to impart some of the lessons I've learned along the way," he continues. "By the way, the best lessons are those we learn from others, so I hope you'll take my thoughts and words to heart and put them into practice."

Steps for success

Daniels cites the following life skills for students to keep in mind when seeking and finding job happiness and security:

- Demonstrate technical competence.
- Identify a mentor.
- Pursue continuous professional development.
- Communicate well.
- Learn from other people's successes and failures.
- Demonstrate leadership.
- Work well with others.
- Never sacrifice your integrity.
- Be patient.

"These aren't in any particular order, and quite frankly, you'll see they are just a matter

"Believe me when I say that few achieve this last objective, but when you do, you'll find that things like authority, power, and money don't carry as much weight as you might think."

— Doug Daniels, 1993 SDSU electrical engineering graduate

of common sense," he adds. "What you'll often find in the working world is that common sense isn't really all that common."

Daniels is the lead systems engineer for The Aerospace Corporation at the USGS EROS Center in Sioux Falls, where he assists the U.S. Geological Survey and NASA in designing and implementing the next Landsat satellite program.

It's a position that met his career calling. However, the path that took him there had its share of twists and turns

"I've had an opportunity to experience a wide range of positions, both technical and managerial, and in doing so I've witnessed professional behavior that spans the good, the not so good, and the downright ugly," he warns.

Do what you does best

Daniels went through Air Force ROTC at SDSU and spent his first four professional years learning about spacecraft design, satellite operations, project management, and systems engineering.

Shortly after being promoted to captain, and after earning a master's degree in computer engineering, Daniels separated from the Air Force for life in the corporate world.

"During this time I never stopped learning," relates Daniels. "I worked as smart and hard as I could."

However, seven years into his career, he "reluctantly" set his systems engineering career aside based on the advice of his mentor and put on a management hat.

Even though Daniels had misgivings, he did well, quite well in fact. He received five promotions in five years working for Hughes, Raytheon, SAIC, and now The Aerospace Corporation; by age 34, he was one of the youngest vice president's for SAIC, a company of 45,000 employees, accountable for more than 520 engineers and scientists, and responsible for managing a budget in excess of $40 million a year.

"It was an amazing and very challenging experience," says Daniels, who surprisingly set it all aside just two-and-a-half years ago to join The Aerospace Corporation and resume his lead systems engineering career.

The fact that Daniels came full circle brought him to his tenth and most important point:

• Love what you do.

"Loving what you do helps ensure your success, and it will help keep your life in proper balance," relates Daniels. "Believe me when I say that few achieve this last objective, but when you do, you'll find that things like authority, power, and money don't carry as much weight as you might think."

Kyle Johnson

Doug Daniels

Opposite page: Mechanical engineering students, from left, David Schiller, Ben Shafer, Brian Kuechenmeister, and Bill Bruns display their wind turbine powered communications system design during the 2009 Senior Design Conference. The conference provides a showcase of senior-level team design projects, and it highlights team and communications skills of the College's newest class of graduating engineers and technologists.

[Student NEWS]

CHRISTINE KEIERLEBER, of Winner, was one of two South Dakota students featured in the publication of the American Society of Agriculture and Biological Engineers.

At SDSU, she was one of the founding members of Alpha Omega Epsilon, an engineering sorority, and is active in the American Society of Women Engineers as well as serving as a math tutor for freshmen ag and biosystems engineering majors. She also has worked in a research lab. Keierleber, who will graduate in December with a degree in ag and biosystems engineering, plans to go to graduate school in engineering or pharmaceutical sciences.

The Tree of Life stood at the center of this year's SDSU State-A-Thon for the Children's Miracle Network, thanks to some industrious **MECHANICAL ENGINEERING** students.

Organizers hoped to raise $40,000 at the March 20 event in the Volstorff Ballroom in the Student Union on campus. All money raised went to the Sanford Castle of Care in Sioux Falls.

Mechanical engineering senior Bill Bruns of Brookings says, "They said they wanted us to model it after the animal tree of life at Disney. We changed the design so it's more children-themed than animal-themed."

Research efforts

robust for College of Engineering

As the director of engineering research, Dennis Helder doesn't usually have to try to inspire his colleagues to do more research.

Most days, he just tries to keep up.

"There's significant research going on across several departments," Helder says. "One of the things that excites me is that we're developing our research capabilities in very many areas across the College."

When pressed, it's not easy for Helder to name just a sampling of those professors whose research efforts stand out. Though the list of research projects in the College of Engineering spans all departments, he offers these examples of recent successes:

METLAB benefits from Department of Defense contract

An ongoing relationship with the Department of Defense has resulted in a new $9.3 million contract through 2013 for research on the nondestructive testing of components and gun barrels at the Materials Evaluation and Testing Laboratory.

The contract has resulted in the purchase of updated equipment—notably a computerized tomography scanning X-ray machine and digital and laser microscopes. According to Mechanical Engineering Professor Fereidoon Delfanian, in addition to meeting the needs of the Department of Defense, the new contract emphasizes using the lab's cutting-edge technologies to help industries diagnose and solve materials-related engineering problems.

"Our goal is service, education, and research," Delfanian says, noting that regional industries are sure to benefit from the Department of Defense investment in the lab.

To reach out to those industries, Delfanian is in the process of hiring a business and marketing manager for the lab. With high-speed cameras that can track the trajectory of a hockey puck and scanners that can nondestructively pinpoint problems in electronic and mechanical components, the lab has a wide array of services to offer industry.

At any time as many as twenty-five people work on the Department of Defense research. That roster can include postdoctoral students, undergraduates, research assistants, graduate students, faculty, and one subcontractor.

"We have state-of-the-art equipment," Delfanian says, "which gives South Dakota a one-of-a-kind materials testing laboratory."

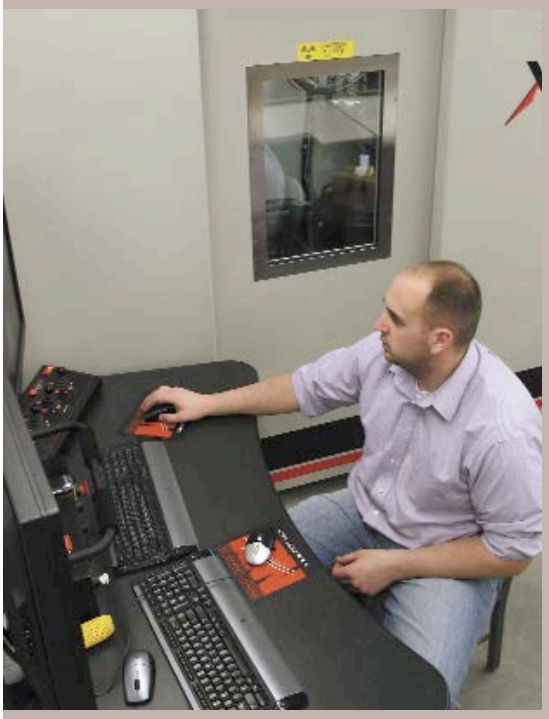
Lohr Structures Lab takes on big projects

Research has also resulted in service to industry at the Lohr Structures Laboratory, a facility that Helder says is fast becoming a Midwest transportation research center.

Lately the laboratory has been involved in a multistage project for Nucor Steel of Norfolk, Nebraska. According to Professor Nadim Wehbe of the Civil and Environmental Engineering Department, the large project had to be broken down to a more manageable scope involving six graduate students. "No one grad student can handle such a project," Wehbe says.

Started two years ago, the project is studying composite concrete/cold-form steel structural systems for use in light-gage steel construction. The experimental phase ended in fall 2009 and students are now doing their analysis of the data. Two of the students have already completed their assigned work and graduated in December 2009.

"Nucor would like to see the fruition of this research in a practical product in cold-form steel," Wehbe says. "They are very much interested in pursuing this new structural system." An extension of



From left:
Assistant Professor Mahdi Farrokh Baroughi holds third generation Si solar cells in the Micro/nanofabrication Lab. Baroughi is a member of the Advanced Photovoltaic Research Group at SDSU.

Research associate John Feldhacker operates the North Star Imaging X-ray/CT Scan. Once a component is placed in the cabinet, the operator can check the X-ray and the CT Scan on the two computer monitors.

Postdoctoral student Tao Huang works on the MTS Landmark Servohydraulic Test System for the evaluation of the strength of materials under various loads.

the project will begin in spring 2010 and require the recruitment of two new graduate students.

The Lohr Structures Laboratory has also been busy with large-scale fatigue testing of manhole covers for Cretex West Concrete Products of Rapid City.

Wehbe explains that each cover was tested for one million load cycles, with each cycle representing the passage of one truck. Students had to work in shifts to monitor the equipment during the lengthy tests.

"At two load cycles per second," Wehbe says, "it takes quite some time to apply one million cycles."

Grants awarded for Qiao's photovoltaic research

Efforts to boost the research of young scientists have resulted in research awards for Assistant Professor Qiquan Qiao of the Electrical Engineering and Computer Science Department.

In February Qiao received notice that he had been awarded a $400,000 Early Career Award from the National Science Foundation. The grant will be used for research and outreach in his quest to increase the efficiency of organic solar cells.

In 2009, Qiao won the Bergmann Memorial Research Award from the United States-Israel Binational Science Foundation. Qiao's award was a $5,000 stipend to run concurrently with an earlier Binational Science Foundation grant.

Investigators eligible for the Bergmann Award were recipients of new Binational Science Foundation grants who earned their doctoral degrees within five years of the award, were not more than 35 years old on the date of submission, and whose research had high scientific quality.

In collaborative research with Michael Bendikov in Israel, the project is seeking to create a new family of light harvesting and carrier transport materials using organic-based conducting polymers.

Qiao explains that while organic solar cells are potentially inexpensive to produce, at this point "the efficiency of the cells is quite low."

A member of the Center for Advanced Photovoltaics, Qiao says he's drawn to the study "because it's an area where providing cost-effective solar cells could provide great benefits."

Dana Hess

Minor will produce ‘nuclear savvy’ engineers

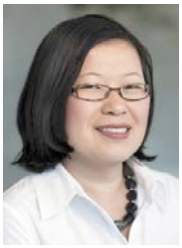
A new engineering minor designed to broaden engineering students’ understanding of nuclear science is certain to make them more attractive to potential employers.

In October 2009 the South Dakota Board of Regents approved an eighteen-hour minor in nuclear engineering. Associate Professor of Physics Robert McTaggart emphasizes that the program won’t produce nuclear engineers but rather “nuclear savvy” engineers.

“They’ll understand how power plants work,” McTaggart says, “and what safety protocols must be followed. The nuclear industry has a broad set of needs.”

“Nuclear savvy” engineers will provide a substantial savings in training for potential employers, according to SDSU Physics Department Head Joel Rauber. One of Rauber’s former students, Michelle Kelly ’99 and ’00, of Xcel Energy, agrees.

Joel Rauber



Michelle Kelly

Robert McTaggart

“A new engineering hire must go through rigorous training,” says Kelly, a fleet program engineering supervisor at Xcel Energy’s corporate offices in Minneapolis. “The minor would give a prospective engineer background and an introduction to the nuclear industry, things the majority of applicants would not have gained in their studies.”

Xcel Energy owns and operates the Monticello and Prairie Island nuclear generating plants in Minnesota.

According to McTaggart, the nuclear engineering minor also would be attractive in the areas of health physics, medical physics, food irradiation, nondestructive testing, homeland security, nuclear forensics, and nuclear medicine.

“We certainly hope that it expands,” McTaggart says, noting that students with the nuclear engineering minor also would be appealing to the proposed Deep Underground Science and Engineering Laboratory at the former Homestake Mine in the Black Hills. “Homestake experiments will need radiation shielding, particle detectors, and isotopically purified materials,” McTaggart says.

The new minor will officially be offered in the fall 2010, but physics department professors were busy telling engineering students about its availability right away after the approval by the Board of Regents because many of the courses they’ll need to qualify for the minor are already being offered. Rauber said only one course will need to be added to the curriculum for the new minor.

Students who opt for the nuclear engineering minor will discover that it has rather unique requirements that include something that the vast majority of college minors don’t demand: an internship. “The internship will make students with that minor attractive to employers,” Rauber says.

This aspect of the minor is seen as more than an internship with specific companies. While the department will look to Xcel Energy to provide internships, other companies, laboratories, and industries will also be utilized.

“We view this as an extended job interview during which the company and the student could determine if they are a good fit,” says Kelly of Xcel Energy, who has degrees in engineering physics and mechanical engineering from SDSU.

Monticello, a 553-megawatt facility in Monticello, Minnesota, is one of two nuclear generating plants owned by Xcel Energy in Minnesota. Such facilities would be prime targets for graduates of the College's new nuclear engineering minor.

“Also, on-the-job training would give students an opportunity to become familiar with a nuclear plant’s processes and procedures.”

According to Kelly, Xcel Energy is committed to finding the most talented employees for its nuclear power plants.

“We are looking for electrical and mechanical engineers who have an understanding of the nuclear industry,” Kelly says. “Having a basic understanding of nuclear power systems and regulations will give these engineers an advantage as they enter the nuclear work force.”

The introduction of the new minor is well-timed as nuclear power plants, like many other industries that depend on engineers, are facing a shrinking pool of potential employees.

“The entire nuclear industry is facing a shortage of qualified staff because of retirements and attrition,” Kelly said.

Dana Hess

“There will be a dire need within the nuclear power industry for engineers with a background in nuclear science in the upper Midwest and nationwide.”

— SDSU Physics Department Head Joel Rauber

New Faces added to Dean's

Advisory Council

Six new members have been added to the Dean's Advisory Council in the past year.

The council will gather April 15 for dinner and presentations followed by meetings all day April 16 and the Distinguished Engineer Awards banquet that evening.

The newcomers are profiled below.

Jim Edwards has been assistant general manager of operations for East River Electric Power Cooperative in Madison since 1998.

Edwards has twenty-seven years experience working for electric utilities.

A Brookings native, Edwards received a bachelor's in electrical engineering from SDSU in 1982 and a master's in engineering from the University of Colorado in 1989. Since returning to South Dakota, he has been active in a number of activities at SDSU, including serving on the advisory board to the Department of Electrical Engineering and Computer Science and as a representative on the Center for Power System Studies.

Edwards and his wife, Rita, live in Madison. She is a native of Belle Fourche and graduated from SDSU with a degree in speech and theater and later received her law degree from the University of Maryland at Baltimore.

Al Heuton, executive director of the Brookings Economic Development Corporation since July 2005, was a previous member of the College's Economic Development Advisory Council.

In 2007 he also became executive vice president for the Brookings Chamber of Commerce.

Prior to Brookings, Heuton worked fourteen years in Scottsbluff, Nebraska (executive director of the Panhandle Area Development District); five and one-half years in Ottumwa, Iowa (executive director of the Area XV Regional Planning Commission); and three and one-half years in Blue Earth, Minnesota (assistant community development director).

Heuton holds a bachelor's degree in community and regional planning from Iowa State University.

Sue, his wife of thirty-three years, is employed at the SDSU Foundation. The Heutons have four children and four grandchildren.

Dale A. Jans, president and owner of Jans Corporation of Sioux Falls, received his bachelor's in civil engineering from SDSU in 1974.

Since its beginning in 1982, Jans Corporation has been involved in design-build, construction management, and general contracting with special emphasis in offices, educational and spiritual facilities, commercial buildings, and light industrial.

Jans Corporation was awarded a Build America Award from the Associated General Contractors of America in 2004 for the construction of the Sertoma Butterfly House. This prestigious award is the only one awarded in South Dakota to date.

In 1988 he was recognized as the Young Engineer of the Year and in 1989 he received honors as the Engineer of the Year from South Dakota Engineering Society.

He is on the advisory group for the Civil Engineering Department at SDSU.

Leo Reynolds, the retired president of Electronic Systems of Sioux Falls, has been a consultant to the electronics manufacturing services industry since June 2009, when he left Electronic Systems.

He founded the firm in 1980 after working for eleven years in the engineering field. Reynolds built Electronic Systems from three employees in 1980 to 165 employees and $25 million-plus in sales by 2009.

Reynolds graduated from the University of Iowa in 1972 with a bachelor's degree in electrical and industrial engineering. With degree in hand, Reynolds went to work at 3M (1972-76) as an engineer and engineering supervisor in New Ulm and St. Paul, Minnesota, respectively.

His next stop was Litton Microwave in Sioux Falls, where he worked from 1976 to 1980.

Mark Shoup, manufacturing engineering manager at 3M Brookings, graduated from

SDSU with a bachelor's degree in mechanical engineering in 1995. After graduation he worked as a design engineer for Banner Engineering in Aberdeen until 1998, when he joined 3M Aberdeen as a process engineer.

At 3M Aberdeen, Shoup worked in various engineering and production supervisory roles and was also certified as a Lean Six Sigma Black Belt. Business supported in the Aberdeen plant included occupational health and environmental safety, industrial adhesive and tape, automotive and aerospace.

In 2006, he and his wife, Laura, relocated to Brookings, where he continued work with 3M as a manufacturing engineering supervisor in the tape-focused factory. He has served as 3M's manufacturing engineering manager since 2008, supporting the skin and wound care, infection prevention, and food safety divisions.

Laura (Walter) Shoup, originally of Arlington, also attended SDSU and ran cross country and track for the Jackrabbits before completing her health and physical education degree at Northern State University. They have two children, Carter and Kayla.

Gregg Stedronsky, originally from Wagner, is vice president of engineering for General Mills.

He received his mechanical engineering degree from SDSU in 1984 and his master's of business administration from the University of Minnesota.

He joined General Mills in 1991 after working at Control Data.

At General Mills, Stedronsky began in the Technology and Operations Division and in 1996 he moved to General Mills' Lodi, California, manufacturing facility.

In 1998, he moved to West Chicago. In 2001, Stredronsky returned to Minneapolis. He was promoted to vice president of engineering in 2006.

Stedronsky's wife, Kathryn (Treiber), is from Alcester and is a 1988 SDSU grad in early childhood development. They have three children—Adam, Evan, and Blake—and make their home in Chaska, Minnesota.

Yogi's words describe College construction

In the early 1960s Yogi Berra often witnessed Mickey Mantle and Roger Maris hitting back-to-back home runs for the New York Yankees. He explained the phenomenon this way: "It's déjà vu all over again."

Berra could just as well be explaining the experience of the College of Engineering where one major Electrical Engineering and Computer Science building project is being followed quickly by another project. The fact that the new project will be a mirror image of the first just adds to the feeling of déjà vu.

At four stories and 29,000 square feet, the west wing of the Electrical Engineering and Computer Science Building is on the fast track to completion.

The west wing was in the College's plans from the start of the building project, but a donors' meeting on September 22, 2009, adjourned with an aggressive plan for fund-raising.

"Fund-raising for this building is under the leadership of Jerry Lohr," Dean Lewis Brown says. Lohr, a 1958 civil engineering graduate, has a generous history of making significant contributions to the College and the University.

After the September 22 meeting, fund-raising for the project proceeded at such a vigorous pace that it earned approval from the Board of Regents in December and from the South Dakota Legislature in March 2010 with the College given the authority to spend $5.1 million. All of the money for the project has been raised through donations.

The fast start on the new wing means that if all goes well, when the school year begins in fall 2011 the entire Electrical Engineering and Computer Science Department will have a new home.

"We'll be entirely in one building," says Department Head Dennis Helder, explaining that his department, already occupying the east wing, will use half of the west wing with the Physics Department housed in the rest. The project provides the Physics Department with a unique opportunity to design improved instructional space for the thousands of students who are required to complete physics courses.

Both wings of the new building are a testament to the emphasis Helder's department places on photovoltaic and solar cell research. The lower level of the east wing will have a cleanroom for research on silicon-based solar cells and a lab in the west wing will be dedicated to organic-based research.

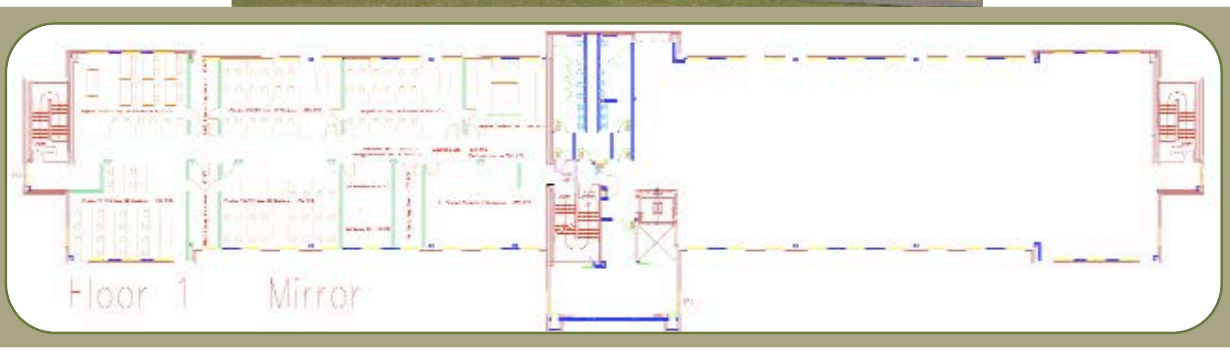
As much as Helder is looking forward to the completion of the building project, his colleagues in other departments in the College of Engineering are also watching impatiently, waiting for the day when more space is cleared out in Crothers Engineering Hall.

"Two departments that are really strapped for space—Mechanical Engineering and Civil and Environmental Engineering—are just as hopeful that this happens as Dr. Helder is," says Brown. "This is the best way for a donor to impact the facilities of the College of Engineering. Both the ME and CEE departments will make valuable use of space vacated in Crothers by Physics after the west wing is completed."

And when the dust settles on the construction of the west wing, the College's long-term plans call for renovations at Crothers Engineering Hall and a new building in place of the annex on the east side of Solberg Hall for the Mathematics and Statistics Department and the Engineering Resource Center.

Yogi Berra also had an expression fit for this state of affairs: "It ain't over till it's over."

Dana Hess



Need for Computational work draws students, business

Mathematical horsepower.

That's the term Kurt Cogswell uses to describe the expertise that computational science and statistics graduate students are supplying to a variety of research projects.

Cogswell, the head of the Mathematics and Statistics Department, is pleased with the way the relatively new doctoral program has been accepted by students and the business community. First offered in 2006, there are currently fifteen students in the program, which had its first two graduates in December 2009.

One of those grads, Tom Brandenberger, was snatched up by the Mathematics and Statistics Department, where he now serves as an assistant professor of statistics. The other graduate, Alfred Furth, parlayed a graduate fellowship at CAPITAL Card Services in Sioux Falls into a full-time position there as portfolio analytics manager.

"Those initial successes gave us an indication that we were on the right track," Cogswell says.

In addition to newly minted graduates, the program has seen businesses like CAPITAL Card Services and Meta Payments in Sioux Falls welcome doctoral students to take part in their research projects.

Furth's research includes using statistical models and algorithms to help CAPITAL make profitable decisions for its clients.

"The process of building models has led to discussions and research into a better method of measuring a model's ability to separate 'good' cardholders from 'bad' cardholders," Furth says.

Originally interested in biostatistics while working at the Mayo Clinic, Furth looked at doctoral programs at the Iowa State University and the University of Minnesota. The freedom to pursue other areas of research was one of the factors that led Furth to choose SDSU.

"I really liked that about the program," Furth says. "I was free to do research I was interested in rather than what was given to me, which can happen at larger institutions."

That research is paying off for businesses. CAPITAL Card Services and Meta Payments both established $100,000 fellowships in 2008 to pay students in the doctoral program while they do their research for the companies.

Assistant Professor of Statistics Tom Brandenberger looks over the shoulder of Nat Lutz while he works on a model for peer-to-peer lending that predicts the probability of an applicant's loan being funded. Brandenberger was one of the first two graduates of the statistics doctoral program. Lutz, of Eureka, and Valerie Bares, of Tyndall, are both seeking their master's degrees in statistics.

"In many disciplines, there's a substantial need for computational work to accompany the field work or the analytic work."

— Kurt Cogswell, head, Mathematics and Statistics Department

"They're doing research on a problem of significance to the provider of the fellowship," Cogswell says. "That's like gold to us."

The recognition of the need for "mathematical horsepower" in many disciplines has led to the creation of a unique model for the doctoral program. Some student research is being conducted in other disciplines such as financial modeling, the biological sciences, or health science. In those cases, students have two advisers—one with computational or statistical expertise and one with expertise in the other discipline.

"In many disciplines, there's a substantial need for computational work to accompany the field work or the analytic work," Cogswell says.

Companies have recognized the need for computational skills by changing their hiring practices, Cogswell explains. A company that may have hired only an employee with a master of business administration will now hire, in conjunction with the MBA, someone with a master's degree in statistics or a doctorate in computational science or statistics.

"There's growing regional recognition of the need for these highly qualitatively skilled young people," Cogswell says.

Dana Hess

Faculty retirements

ANNE C. THOMSON

Math Instructor Anne C. Thompson doesn't plan to move from Sioux Falls, but she and her husband, Bill, do plan to do a lot of traveling after she retires.

During her five-year SDSU career, Anne Thompson, 66, taught precalculus, calculus, algebra, and statistics both at University Center in Sioux Falls and on campus. This year she is teaching strictly in Sioux Falls.

The majority of Thompson's career was spent teaching at Lincoln (2001-04) and Washington High Schools (1985-99) in Sioux Falls. In 1993 she also started teaching night classes for various universities at USDSU (now University Center). She retired from public schools in 2004, spent one year working as a math curriculum specialist with the State Department of Education in Pierre, and then joined the SDSU faculty full time.

"I enjoyed the opportunity to work in the department and with [Department Head] Kurt Cogswell and see the progress they've made even in my short years," Thompson says.

Bill Thompson, a retired educator, retired from the state House of Representatives in March after finishing his fourth term.

DAVID A. WAHLSTROM

David A. Wahlstrom, an associate professor in Engineering Technology and Management, is retiring after spending the last six years at SDSU. But this is his eighty-ninth semester of teaching engineering, beginning at SDSU when he taught surveying and soil mechanics from spring 1966 to spring 1968.

Wahlstrom, who grew up in Hendricks, Minnesota, currently teaches construction management.

Wahlstrom, 68, came here from the University of Houston, where he taught engineering technology. He retired there after twenty years and was awarded emeritus status. He also taught ten years at Sullivan County (New York) Community College.

Wahlstrom received his bachelor's and master's degrees in civil engineering from SDSU in 1964 and 1970, respectively.

He took advantage of an opportunity to earn a juris doctorate degree from Indiana University, but never practiced law.

Wahlstrom did spend twenty-six summers working in twenty-six different parks as an engineer for the National Park Service. "It gave me something to do in the summers and allowed me to learn new skills, many of which were subsequently shared with students," he says.

In his retirement, Wahlstrom plans to move to a warmer climate, like Texas, and continue offering continuing education seminars to practicing professionals, he adds.

BETTY LARSON

After spring semester 2009, longtime Math Instructor Betty Larson retired, drawing to a close a career that began in 1981. She taught freshman and sophomore classes for twenty-eight years. In her retirement, she and her husband, Neil, are spending time riding horses and herding their five grandchildren.

[Faculty NEWS]

DAVID GALIPEAU, professor of electrical engineering, was selected as the College's 2009 Distinguished Researcher and honored with representatives from other colleges at the campuswide Celebration of Faculty Excellence banquet February 16.

Galipeau's research focuses on photovoltaic devices, micro and nanosensers for hazardous gas detection, and nanotechnology. He coordinates the National Science Foundation's Integrated Graduate Research and Training Program, the Alternative Power Technologies Program, and the Micro and Nanoelectronics Fabrication Laboratory.

DANIEL HUMBURG, a professor in agricultural and biosystems engineering, was chosen as Academic Advisor of the Year for 2009-10 by the dean and his management team. He has been on the faculty since 1991 and will be honored at the Distinguished Engineers banquet April 16.

Humburg, a 52-year-old native of Blue Earth, Minnesota, earned his bachelor's degree in agriculture from the University of Wisconsin-River Falls in 1982. That was followed by a master's in agricultural engineering from SDSU in 1987 and a doctorate in agricultural engineering from the University of Illinois at Urbana-Champaign in 1991.

RICH REID, assistant dean, was named one of ten national Outstanding First-Year Student Advocates by the National Resource Center for The First-Year Experience and Students in Transition at the University of South Carolina December 18, 2009.

Reid is a professor of civil and environmental engineering who joined the faculty in 1995. He was named assistant dean in 2001.

Recipients are selected by a review of nomination portfolios by a national panel with two recipients in each of five categories. Reid was selected from among nominees from four-year colleges and universities with enrollments between 7,001 and 15,000 students.

Criteria is based on improving the educational experiences of first-year students. The award is cosponsored by Cengage Learning.

DANIEL SCHAAL, a professor of mathematics and statistics, was selected by a vote of students as Teacher of the Year for 2009-10 for the College. He has been on the faculty since 1997 and will be honored at the Distinguished Engineers Banquet April 16.

His areas of interest are combinatorics, discrete math, undergraduate research, and the Ramsey Theory.

SDSU PROFESSOR ELECTED TO HEAD INTERNATIONAL GROUP

Sung Shin, an SDSU computer science professor, is leading the work of an international computer industry group.

SDSU Computer Science Professor Sung Shin is serving as chair of the Special Interest Group on Applied Computing, one of thirty special interest groups working under the Association of Computing Machinery, a worldwide computer science organization with more than 900,000 members.

One of Shin's primary responsibilities within the international group is cochairing the ACM Symposium of Applied Computing, a yearly conference sponsored by the Special Interest Group.

Attendants have the opportunity to publish papers and conduct further research at the event. The selective conference has less than a 25 percent acceptance rate and admits just 500 applicants per year. The 25th annual conference took place in Switzerland this spring.

During his two-year term, which began July 1, 2009, Shin hopes to increase publication opportunities for members through the publication of a SIGAPP journal. The interest group has more than 650 paid members from fifty countries.

new **Faculty**

Charles Bingen

The college's newest mathematics instructor is a self-described tinkerer who enjoys creating things out of wood and metal. And, rumor has it, one could do far worse than a dinner invite to the Bingen home.

"My wife and I have both previously been chefs, and as a family we create dishes influenced by our French, Italian, German, and Korean culinary backgrounds," Bingen says. "This, combined with our children's sense of adventure, leads to some intriguingly tasting meals."

He also likes to fix old cars, make bookcases, target shoot, and "read indiscriminately from fiction, nonfiction, and science fiction."

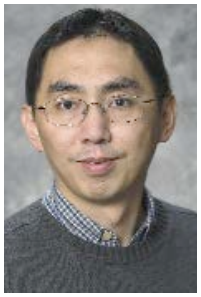
Before joining the SDSU faculty in August 2009 to teach intermediate algebra, trigonometry, and precalculus, Bingen taught and served as both department chair and interim academic dean at Little Priest Tribal College in Winnebago, Nebraska.

He earned his bachelor's degree in 2003 and his master's in 2006, both in mathematics from the University of South Dakota in Vermillion, his hometown.

As he completes his doctorate in education, he expresses his gratitude for the continued support of his wife, Kate, and their children Bailey, 10, Logan, 8, Mallory, 4, and Samantha, 1.

"They demonstrate a great deal of patience," he says, "as I continue to explain my interest in researching educational reform in higher education."

Jikai Du



Jikai Du earned his undergraduate degree in his home country of China, receiving his bachelor's degree in materials science and engineering from Tsinghua University in 1991.

But he came to the United States for his doctorate, which he earned, in engineering science and mechanics, from Pennsylvania State University in University Park in 2008.

Du was a senior graduate assistant in the Engineering Science and Mechanics Department at Pennsylvania State from May 2005 through August 2008.

Then he came to SDSU, in September 2008, serving as a postdoctoral research associate in the Mechanical Engineering Department until August 2009, when he became an assistant professor. He teaches engineering materials and metallurgy.

"I enjoy the life in Brookings with my wife and daughter," Du says. "I like reading, listening to music, and sports."

Gregory Michna

A St. Paul, Minnesota, native, Michna joined the Mechanical Engineering Department in fall 2009. An assistant professor, he teaches classes in the thermal-fluids area, including fluid mechanics and heat transfer. He also serves as coadvisor for the SDSU Student Section of the American Society of Mechanical Engineers.

He earned his bachelor's degree in 2001 from the University of Wisconsin-Madison and his doctorate from the University of Illinois at Urbana-Champaign in 2006, both in the field of mechanical engineering.

After a year as a lecturer at Iowa State University, he spent two years pursuing electronics cooling research as a postdoctoral research associate at Rensselaer Polytechnic Institute in Troy, New York.

He and his wife, Sarah, have two children, Rebecca and Joseph. His outside interests include playing with his kids, running, and cooking.

Stephen Gent

An assistant professor of mechanical engineering at State since August 2009, Gent teaches thermodynamics. His research interests are thermo-fluids and energy systems; simulation-based engineering and design; virtual engineering and manufacturing; and information management and systems engineering.

A Keota, Iowa, native, Gent earned three mechanical engineering degrees from Iowa State University in Ames, his bachelor's in 2003, his master's in 2006 and his doctorate in August 2009.

He wrote his thesis on "Incorporating computational fluid dynamics into a virtual engineering environment" and his dissertation on "Computational modeling of multiphase fibrous flows for simulation-based engineering design."

Before joining the SDSU faculty, Gent served as a graduate teaching assistant (2006-2008) and a graduate research assistant (2004-2009) at Iowa State.

He has been married to his wife, Melissa, since 2006.

Khadijeh Bayat

A native of Zanjan, Iran, Bayat joined the Electrical Engineering and Computer Science Department in August 2009, teaching electrical engineering courses including electronic circuits and electronic materials.

Bayat earned her Bachelor of Science degree in electrical engineering from the Iran University of Science and Technology in Tehran. She received her master's and doctoral degrees in electrical engineering from the University of Waterloo, Canada, in 2004 and in May 2009, respectively.

Before joining SDSU, she worked as a postdoctoral fellow at the University of Waterloo and as a research scientist in T-Ray Science Inc. Her research interests and activities are in the areas of nanophotonics, silicon photonics, and integrated photonic terahertz circuits.

When not working, Bayat enjoys traveling and camping. Her husband, Mahdi Farrokh Baroughi, is also an assistant professor in the Electrical Engineering and Computer Science Department.

Xiao Qin

A native of Suzhou, China, Assistant Professor Qin joined the Civil and Environmental Engineering Department in August 2009. He teaches traffic and transportation engineering.

Qin earned his bachelor's degree in 1996 and his master's degree in 1999, both from Southeast University, Nanjing, China. He earned his doctorate in 2002 from the University of Connecticut, Storrs.

Before joining SDSU, he served as an assistant scientist at the University of Wisconsin-Madison.

"I enjoy watching all kinds of sports—basketball, football, racing cars, and so on," Qin says. "I am a big UConn Husky fan! I love hanging out with my friends and working out regularly."

George Hamer

His title may be new, but he's no newbie.

Hamer, the new assistant department head of Electrical Engineering and Computer Science, has been at SDSU since fall 1989. What he did before that, he says, is "too numerous to mention!

"I have done everything from washing dishes to managing 'white table cloth' restaurants," he says. "I've worked for a civil engineering firm in Fargo and as a construction inspector. I started a construction signing business, then decided to go back to school, where I discovered a love of teaching."

Also an associate professor, Hamer currently teaches computer networks, compiler construction, design, and analysis of computer algorithms.

He earned his bachelor's degree in 1980 from North Dakota State University in Fargo, his hometown. He earned his master's in 1992 from Moorhead (Minnesota) State University and his doctorate from North Dakota State in 2006.

At State, he began as a lecturer and was promoted to assistant professor in 1997 and associate professor in 2007.

He has been married for nearly twenty years to his wife, Julie. He has two stepchildren, Bobbi Jo Rohaley and Shawn Teiken, and two grandchildren.

"I enjoy reading classics, biographies, and science fiction," Hamer says, "and restoring classic cars. I currently have a 1970 Plymouth in pieces scattered around the garage!"

Joel Rauber

Joel Rauber has done quite well for a high school drop out. He's been at State for twenty-five years, and is now the new head of the Physics Department.

"I have no high school diploma, and I'm probably officially considered a high school drop out in some statistical data base," Rauber says. "I dropped out of high school after my junior year to attend college, basically skipping my senior year."

A native of Decatur, Georgia, a suburb of Atlanta,Rauber earned his bachelor's degree in physics from Emory University in Atlanta, Georgia. He came to State in fall 1985, after earning his doctorate in physics that summer from the University of North Carolina at Chapel Hill. "So my entire postschooling professional career has been at SDSU," he says.

With few exceptions, Professor Rauber has taught nearly every course offered by the Physics Department.

"I'm somewhat of a utility player for the department," he says.

His field of expertise is gravitational physics—Einstein's theories. His subfield is numerical relativity, an area in which he has done research related to understanding and simulating black hole collisions.

He and his wife, Maria Ramos, head of the Modern Languages Department at State, have an 8-year-old daughter.

"My most time-consuming hobbies are military history and long-distance backpacking and hiking," Rauber says. "I have completely hiked the entire length of the Appalachian Trail twice."

Thomas Brandenburger

When you come from a large family, you needn't look for things to do. Just ask Assistant Professor Brandenburger, the second newcomer to the Mathematics Department.

"Both my wife, Janice, and I are from very large families, so our hobbies are pretty much attending family functions," Brandenburger says. "We have sixty nieces and nephews between us and about a dozen great nephews and nieces."

They also have four of their own—Isabel, 12, Emma, 10, Joey, 7, and Ava, 2—and a few other things to keep them occupied.

"We have a large garden, two dogs, nine cats, two fish, and two chickens."

The New Effington native earned all three of his degrees from State—his bachelor's in math in 1992, his master's in math in 1995, and his doctorate in computational science and statistics in 2009. His wife also earned her degree from State in 1995 and is a registered dietitian.

After graduating in 1995, Brandenburger spent the next five years as an officer on active duty with the Navy. He was an instructor at the Navy Nuclear Power School in Orlando, Florida, then Charleston, South Carolina.

He has continued in the Navy reserve and was recalled in 2003-2004 to conduct port security operations in Kuwait for Operation Iraqi Freedom. He recently finished a tour as commanding officer of a military police unit.

After leaving active duty in 2000, he worked as an information technology consultant for Perot Systems in Dallas and Indiana.

He returned to South Dakota in August 2002 and worked at Dakota State University in Madison as a network analyst in computing services. He also taught adjunct for DSU and SDSU on occasion.

Brandenburger joined SDSU in fall 2009. He teaches courses related to financial statistics.

George Duffey

Active life, healthy curiosity keeps physics prof going strong

In George Duffey's unique little niche of an office in Crothers, lined up on a metal shelf within easy reach, are all of the physics books he's written, from his first in 1962 to his latest, just out in 2010.

Though the casual count comes in at eleven, the total is, precisely, eight.

"This one is a reprint and these two are translations, one into Japanese and one into Spanish," Duffey points out, smiling a bit shyly—as if he's reluctant to take too much of anyone's time with unnecessary information, but cordially willing to say more if asked.

As if he's wondering whether his visitor is familiar with the universal language of physics and the nuances and tones so clear to him.

As if at the age of 89—90 next Christmas Eve—publishing a new textbook and honeymooning in Hawaii with his new bride is nothing out of the ordinary.

For George Duffey, it's not.

Iowa boy

Born and raised on a farm near Manchester, Iowa—"halfway between DuBuque and Waterloo," Duffey says, he and his brother discovered a mutual passion and a shared curiosity.

"My older brother Loren and I were interested in scientific things," Duffey recalls. "We read *Popular Science* and *Popular Mechanics* since we were in grade school."

Loren, a year and a half older than Duffey, became an engineer, studying weight distribution in airplanes and satellites for NASA. Today, he lives in Placentia, California, "near Los Angeles and Disneyland," Duffey says.

Their younger brother, Roy John, born six years after Duffey, found his career in the insurance business and now makes his home in Mesa, Arizona.

Duffey, after graduating from high school in 1938, earned a bachelor's degree in physics and chemistry from Cornell College in Iowa in 1942. For his graduate degrees, he went to Princeton—"half way between Newark and Trenton.

"My thesis was in the area of detonation waves," he says. "I got my doctorate in 1945, during the war."

The same year, he married his first wife, Helen, and joined the chemistry faculty at South Dakota State.

He taught at State until the 1958-59 academic year, when he taught physics and chemistry at the University of Mississippi. Then he returned to State, this time to the Physics Department, remaining there until retiring in 1991 after forty-five years.

He and Helen had three children: James, Ann, and Mary, now deceased. Helen died in 2001.

Curious George

Duffey credits his remarkable health to "being thin and being active.

"I weigh 125 pounds," he says. "I've always been underweight.

"I walk, I garden. I like to eat a lot of vegetables and fruit, not much meat."

And he's no couch potato.

"I don't particularly care for standard television," Duffey says. "I often watch what's on PBS. Also some newscasts. I just have an antenna on my roof. I get all I want.

He's also a licensed ham radio operator.

"I talk regularly with my son in Albuquerque," he says.

Family genetics, it seems, could hardly be better.

"Loren has some arthritis, but he gets around pretty good," he says. "I had a great uncle George who was quite active in his middle 90s."

Does that mean a ninth physics book may be in the offing?

"I can't say 'no,'" Duffey smiles. "Every time I write a new textbook, I learn something, too. I'm always curious."

Precisely so.

Cindy Rickeman

"Every time I write a new textbook, I learn something, too. I'm always curious."

— George Duffey, retired physics professor

Opposite page, top: George Duffey, 89, holds his latest book, *Concepts of Modern Physics,* while the professor emeritus poses with the other ten books he has written.

Opposite page, bottom: Duffey poses with Dean Lewis Brown on the third floor of Crothers Engineering Hall.

Knabach

Former students give Knabach lasting memory

When Wayne Knabach walked off the SDSU campus with diploma in hand sixty years ago, "nobody would have ever predicted a teaching career for me, to say nothing of something like this," he says. "It's a miracle."

Retired in 1995 after thirty-eight years teaching in the Department of Electrical Engineering, including the last twenty years as full professor, his name is forever attached to the Electrical Engineering and Computer Science Building that opened fall 2009.

Stepping inside the south entrance is the Wayne Knabach Student Lounge that was dedicated in October when he was honored with an SDSU Center for Power Systems Studies lifetime achievement award.

Seeing the room and plaque bearing his name carries special meaning because it was spearheaded by former students, Jim Edwards and Jim Wilcox, through the Wayne E. Knabach Electrical Engineering Fund created by the College to honor his service to the program.

Edwards, a 1982 electrical engineering graduate, credits Knabach '49 for a successful career in the power industry.

"Wayne is the reason I went into the electric power utility business," says Edwards, who is assistant general manager of operations for East River Electric Power Cooperative in Madison.

"I've had a great career which I attribute to Wayne," he adds. "He was a tremendous instructor and mentor and I felt honored to have him as a teacher."

Wilcox, a 1976 electrical engineering graduate and manager of government and regulatory affairs for Xcel Energy in South Dakota, indicates students easily connected with Knabach.

"He was someone we all looked up to, admired, and respected for his knowledge and experience," he says. "I always appreciated his availability; he made time to listen."

Knabach was honored when taking a phone call from Dean Lewis Brown indicating plans for the student lounge.

Wayne and Kathy Knabach at the October 2009 dedication of a student lounge.

"Wayne is a role model that any of us would want to emulate. We all thank him for his advice and service."

— former student Jim Wilcox

"I fully recognize the uniqueness of this room dedication, and I'm very proud of the students implementing it," he says. "It's just unbelievable for something like this to happen to me."

Building relationships

Knabach was named coordinator of the Center for Power Systems Studies in 1972—an appointment that impacted his career and a countless number of students under his tutelage.

The center consists of a partnership with the regional power industry and dedicated to teaching students through direct involvement with the field.

"Wayne Knabach positively affected the lives of a significant number of students while teaching at SDSU," says Professor Steven Hietpas, current coordinator of the Center for Power Systems Studies. "He had a tremendous impact on the power community in this region."

Consisting of five utilities when taking charge of the Center, Knabach made the decision to attract more utilities and add associate members who brought in consulting engineers and suppliers.

As the center's membership more than doubled in succeeding years, he also implemented field trips for students that resulted in fifteen power site tours.

Knabach and his students developed a close bond, stemming from how he easily related to them and his considerable understanding of the power industry, particularly from summer sabbaticals with power industries.

Wilcox relates how impressed he was with Knabach's "huge collection of books" on the west wall of his office in Harding Hall.

"I would gaze at those books and look at amazement at the breadth of engineering topics," recalls Wilcox, who also remembers a study lounge Knabach established across the hall from his office.

"It was an inviting place with big windows that brought in sunlight on a cold winter afternoon," he says. "He subscribed to industry publications that we'd go in and look at.

"I still subscribe to those magazines," adds Wilcox. "I'm proud to say I've been a power system engineer ever since."

While Knabach is grateful for what students did for him, he is just as pleased that the majority stayed in the area.

"I enjoyed my career because I like South Dakota and a lot of my students stayed in this state or adjacent states with utilities and consulting engineering firms," he says.

"I have to pinch myself to think this is real," he says. "I've been very fortunate and very blessed."

Kyle Johnson

Alum shares insights on collapse, rebuilding of I-35W bridge

Barbara Sahebjam '84 ate alone on the evening of her twenty-seventh anniversary. Her husband, Khani '82/'84, was at the office.

Like many husbands, Khani (pronounced as Connie) had good intentions to be home that evening—August 1, 2007. In fact, Sahebjam was briefly at home after work that evening. He even ignored his Blackberry when it rang. Then the dispatcher called his landline.

It was a call that could not be ignored—the I-35W bridge across the Minnesota River in Minneapolis had collapsed. Sahebjam, now deputy commissioner and chief engineer with the Minnesota Department of Transportation, was a district engineer then.

"I didn't return home for three days," Sahebjam told more than 250 students and faculty members attending the annual Joint Engineering Council lecture in the Volstorff Ballroom November 16.

Sahebjam had crossed that bridge at 5 p.m. August 1, 2007, on his way home. The forty-year-old bridge collapsed at 6:05 p.m. When he arrived back at his office at 7 p.m. there were 150 Department of Transportation employees activated, Sahebjam reports.

By 11 p.m., detour routes to the major commuter thoroughfare had been posted on the department's Web site.

Dealing with disaster

The collapse brought tragedy—thirteen deaths and 140 injuries—and an abundance of skepticism from the public and the media. But it also provided an opportunity for the department to function in crisis mode, and Sahebjam says it overcame the complexities because of preparation and commitment to a single goal.

Just six months before the collapse, the department had a two-day, mock-incident training on how to handle a disaster. Part of that training taught department personnel to work with other agencies. That was vital because within a day a bevy of federal agencies were on site.

National Traffic Safety Board officials took charge of the site, which carried an average of 140,000 vehicles daily.

Death toll lower than expected

There were more than 100 vehicles on the bridge at the time of the collapse as well as construction equipment and crews that were doing resurfacing work on one of the bridge's eight lanes as part of an overall $9 million project on I-35 by Progressive Contractors Inc.

Given the number of people on the bridge, it's amazing that the death toll didn't surpass thirteen, Sahebjam says.

Initial fears were that many more had lost their lives when the 115-foot high bridge collapsed into the water, but officials found that many simply abandoned their vehicles and walked away. Navy divers were sent in to recover those who did die in the murky waters.

The last body was recovered August 20 and the channel was reopened for navigation on September 6.

Recipe for successful fast track

Reconstruction of such a bridge (the original had a 456-foot span) should take three to three and one-half years, Sahebjam says. But aided by quick congressional approval of funds and a coordinated approach by various entities, the bridge was built in eleven months.

Flatiron/Manson, a Colorado firm, began construction October 8 and the bridge was opened at 5 a.m. September 19, 2008.

Because of the critical need for the new bridge and attention created by the collapse, the bureaucratic process was expedited, including the environmental review. That shows the importance of building sound partnerships with those in the construction process, Sahebjam says.

"In addition to technical skills, young engineers must learn to work with people and foster collaboration," he shares.

Dave Graves

Khani Sahebjam, a State grad who now is the chief engineer for the Minnesota Department of Transportation, meets with retired Civil Engineering Professor Arden Sigl, right, and Fred Ritterhaus, left, former head of Banner Associates. Sahebjam spoke about the collapse and rebuilding of the I-35W bridge in Minneapolis at the annual Joint Engineering Council lecture November 16, 2009.

Gold Water Drop Award

When Dwayne Rollag received the Gold Water Drop Award, a lifetime achievement honor through the American Water Works Association, the recognition was an instant rewind of his life.

"It brings back good memories of the people I worked with," he says. "I was really involved with the water works section in South Dakota and some of the national people. Most of my former colleagues are retired."

Rollag is retired, too, stepping down in 1999 after teaching in the Department of Civil and Environmental Engineering for thirty-four years, including the last twenty years as department head.

The Gold Water Drop Award goes to members who give valuable service and support for American Water Works Association programs and goals. Eligibility requires that members be in good standing and be active in the organization for at least fifty years.

Rollag was presented with the award in November 2009 during the American Society of Civil Engineers' (ASCE) annual awards banquet on campus. He initially learned of the award in a letter from ASCE headquarters and was supposed to receive it at the national convention in San Francisco.

"It was a complete surprise and I was very honored," he says. "I couldn't make it to San Francisco so they sent it to the local chapter here instead."

Degrees, experience glore

The American Water Works Association is dedicated to providing water and wastewater education, training, and service in an effort to protect public health and the environment.

Rollag's degrees are all in civil and environmental engineering. His bachelor's degree came from the University of Minnesota in 1959, followed by a master's in 1966 from SDSU, and a doctorate from Purdue University in 1975.

His major field of interest is water and wastewater, which includes all issues related to

DEAN'S CLUB

The Dean's Club is comprised of graduates and friends who gave $500 or more to the College of Engineering from January 1 through December 31, 2009

Dean's Club membership consists of alumni and friends who have contributed $500 or more annually to the College of Engineering. Dean's Club members are recognized as devoted friends of the College who make a significant impact on the College's future. Member names will be listed in the SDSU Honor Roll and the College newsletters, they also will receive invitations to special College and University functions, updates from the College dean, and an SDSU Dean's Club car decal.

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supply, treatment, distribution, collection, and disposal of water and wastewater.

In 1990 he was president of the South Dakota section of the American Water Works Association. Before that, he served as coordinator for annual training courses across South Dakota through the South Dakota Department of Environment and Natural Resources.

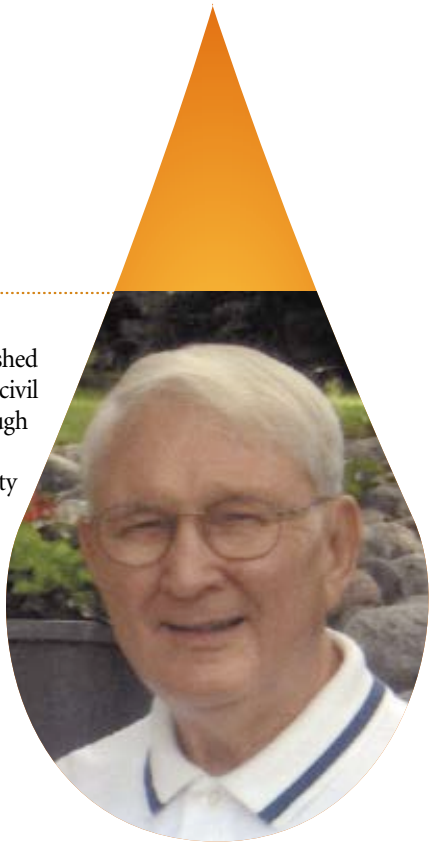
He put his knowledge to work many times, particularly when it came to conducting studies on the ozonation of water for disinfection purposes in South Dakota communities.

"It was rewarding and very worthwhile work through the years and I had a good staff that assisted me," says Rollag, who established scholarships for graduate students in civil and environmental engineering through the SDSU Foundation.

Joining the SDSU engineering faculty in 1965 and leading the department through the 1980s and 1990s, Rollag has had no doubts about its future.

"The quality of the department is outstanding," he says. "There is excellent leadership."

Kyle Johnson



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Phonathon

Event produces valuable commodities: contacts, cash

The College's Phonathon is designed to give students a sense of what life is like in the engineering field as seen from the eyes of alumni.

This January's Phonathon did just that, from both a financial and career standpoint.

From a financial perspective, the twenty-seventh annual Phonathon reflected America's struggling economy. Pledges totaling $141,875 were collected, still $10,000 better than the average Phonathon during the first half of the prior decade but just under last year's number ($145,282) and well off the goal of $200,000.

That ambitious goal was $22,000 better than had ever been collected. The Phonathon brought in $177,935 in 2007.

From a career perspective, the Phonathon continued to be useful in connecting students with alumni. "Students learn of internship opportunities and talk to people in the industry working on projects they haven't heard of," Phonathon cochair Tyler Dutton says. Kyle Hoeke, a mechanical engineering major was the other cochair.

"Some things alumni are working on are pretty advanced and the callers are interested in that," he adds.

Downsized Calling Center

This was Dutton's third year as Phonathon chairman. "There are always different things each year," the electronics engineering major says. This year's wrinkle was shrinking into smaller quarters because the SDSU Foundation Calling Center relocated.

In its previous location, sixteen phones were available. In its new location, only ten calling stations were available.

To keep that from reducing the number of calls made during the eight-day Phonathon (January 30-February 6), Dutton secured another room in the Enterprise Center where callers could receive their half-hour training session on the computerized phones and the purpose of the Phonathon.

A DECADE OF GIVING

2010 - $141,875	2004 - $120,189
2009 - $145,282	2003 - $138,140
2008 - $175,904	2002 - $151,970
2007 - $177,935	2001 - $111,701
2006 - $166,030	2000 - $141,442
2005 – $154,421	Total – $1,624,889

Previously, that session was done in the Calling Center, meaning there was a half-hour that the phones weren't in use.

This year the Phonathon shifts were 1:30 to 5 p.m., 4:30 to 8 p.m., and 7:30 to 11 p.m. during the opening weekend. Weekday shifts were 5:30 to 8:30 p.m. and 8 to 11 p.m. West Coast alumni were targeted during the late hours. All told, about 170 students placed 4,922 calls in eighteen shifts.

Departments divvy dollars

Those who couldn't be reached during Phonathon week were called later by student employees of the Calling Center.

How Phonathon funds are spent depends on the department. "A lot of departments fund some of their clubs, some money goes to lab equipment we wouldn't be otherwise able to get, and some for student and faculty travel," says Dutton, who graduates in December.

The new Phonathon chair hasn't been announced, but the dates are January 29-February 5, 2011.

Dave Graves

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THANK YOU to the following alumni, friends, organizations, corporations, and foundations. January 1 to December 31, 2009

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FUNDS CLASSROOM TRANSFORMATION

One of the same rooms in which Bill Moran and Dawn Horner studied as civil engineering majors has been transformed by the company they work for now.

The Howard R. Green Company (HR Green) has funded the remodel of Crothers Engineering Hall Classroom 215, pulling it into the twenty-first century and committing to its maintenance for five years, an overall $45,000 venture.

"The room hadn't been changed since long before I'd been there," says Moran, an '82 alum and vice president and business unit leader at HR Green, a multi-discipline professional services firm. "We wanted to modernize it, bring in technology."

Updates to the classroom, officially dedicated October 2, 2009, include the replacement of outdated chalkboards with white boards. There's now a sound system, a data projector, and new wiring. A new podium heads the classroom. A fresh coat of paint and new base molding and window treatments have brightened up the place. Sixteen modern tables and twenty-one chairs sit upon a brand-new tile floor, quite noticeable in the before and after photos.

"I don't remember the floor being that ugly," Horner laughs.

Project manager and group leader at HR Green for twelve years, Horner earned her bachelor's degree in 1996 and her master's in 1998. She serves on the College's Civil and Environmental Engineering Advisory Committee, where she meets yearly with teachers and the dean; they discuss the needs on both the industry and the educational side and share ideas and solutions.

"It's a great group to be involved with," Horner says. "That's where I heard what the school needed.

"A lot of what I hear there I bring back to the [HR Green] group. We discuss what would best serve them. It made the most sense for us to sponsor a room."

The room is not the first HR Green contribution to State.

The company funds two graduate engineering scholarships every year. They're represented at the Engineering Job Fair and send a judge to the Engineering Expo. They sponsor the American Society of Civil Engineers' golf outing every fall at Edgebrook Golf Course in Brookings.

They're involved in Ready, Set, GO! and GEMS (Girls in Engineering, Math, and Science), two events designed to encourage girls to go into engineering. HR Green engineers have accepted opportunities to speak to students in the classroom and at technical society meetings. Recently they accepted an invitation to teach a course on feasibility studies as part of Senior Design Course.

HR Green has also looked for opportunities to involve SDSU graduate students in their projects.

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"We feel that SDSU is one of the quality engineering programs in the country. We just want to invest in it and help keep it that way."

— Bill Moran, '82, vice president and business unit leader, Howard R. Green Company

Professor Delvin DeBoer teaches in Crothers Engineering Hall Room 15. The classroom was renovated in summer 2009 with funds from Howard R. Green Company.

"We have a project in Sioux Falls with a pilot study at the wastewater plant," Horner says. "A graduate student is doing the pilot testing. We'll use his data, and he'll write his thesis on it. The City of Sioux Falls will fund the thesis project. We're lucky to be involved."

The company is also creating an atmosphere more open to those new to the field.

"Typically, we're always looking for experienced engineers," Moran says, "but in terms of partnering with the University, we have changed our strategy a bit to encourage the hiring of new grads and interns.

"Three years ago, we formalized a university relation strategy where we're trying to give back more and increase our connection with the University. The Howard R. Green Classroom is one way to do that.

"We feel that SDSU is one of the quality engineering programs in the country. We just want to invest in it and help keep it that way."

Cindy Rickeman

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Xcel Energy-Minneapolis
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Foundation
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Citigroup Foundation
Graco Foundation
Land O'Lakes Foundation
MDU Resources Foundation
Pella Rolscreen Foundation
The Toro Foundation
Trane Foundation
Whirlpool Foundation

Back row: Kyle Everson (current student), Todd Mergen '99, Lance Niewenhuis '97, Jody Page '99, Josh Horstman '02, Tyler Semrau '08
Front row: Wade Horstman (current student), MSgt Tonja Jorenby '99 & '06, Daniel Bones '07, Katie McGuire '08, Brian Welch '94, Terry Starkey

Distinguished Engineers, Alumni

Two engineers on the opposite ends of the career spectrum were honored by the SDSU Alumni Association at Hobo Day festivities October 23, 2009.

Carrie (Lambertz) Buthe, a 2004 graduate, was named the Outstanding Young Alumni. Jim Morgan, who received his bachelor's degree in 1969, received the professional achievement award.

OUTSTANDING YOUNG ALUMNI

Buthe, a civil engineer with Banner Associates, caught the eye of the American Society of Civil Engineers, which named her one of the "Top Ten New Faces in Civil Engineering" in 2009.

To put the honor in perspective, her former faculty advisor, Chuck Tiltrum, notes, "It's a tremendous thing to be considered for this award. Considering there are more than 250 civil engineering departments in the nation and thousands of graduates, for her to be in the top 10 is awesome."

At SDSU, Buthe, originally of Sioux Falls, was president of the student chapter of ASCE her junior year and her husband, D.J., was president the following year.

Currently, she serves as a design engineer for the $500 million Lewis and Clark water system, which will move water from the Missouri River via 337 miles of pipeline to allow drinking water to flow out of the taps for an area the size of Connecticut. More than 300,000 people in South Dakota, Iowa and Minnesota will benefit.

In addition to design work, she has coordinated project requirements with landowners, businesses, and municipalities.

Her nominator, Assistant Dean Rich Reid, adds that Buthe "has been a role model to young females as part of the team that conducts hands-on engineering workshops (at SDSU) for high school and eighth-grade girls. These events reach hundreds of young women each year.

"Carrie is a shining example to our youth on how civil engineers make the world a better place."

Carrie Buthe, one of the Top Ten New Faces in Civil Engineering in 2009, also was named as an SDSU Distinguished Alumnus in 2009. She is surrounded by SDSU civil engineering faculty, from left, Arden Sigl, retired professor; Rich Reid, assistant dean and professor; Bruce Berdanier, department head; and Chuck Tiltrum, the retired advisor for American Society of Civil Engineers.

PROFESSIONAL ACHIEVEMENT AWARD

Chief executive officer of Daktronics since November 2001, Morgan has worked with the scoreboard and programmable sign company since 1970, when he was an SDSU graduate student seeking a master's degree in electrical engineering.

By 1971 he was head of engineering at the developing company. He held that post until being appointed president and chief operating officer in 1999. Prior to then he was named company vice president (1976) and executive vice president (1996).

Since Morgan assumed the presidency of the company the Brookings manufacturer has continued its history of profitable growth, from top-line revenue of $123 million in the company's fiscal year 2000 to revenue of $581 million in fiscal year 2009.

Morgan, originally of Ellsworth, Minnesota, is credited with the development and manufacture of the Matside wrestling scoreboard in 1971. That product truly launched Daktronics into its primary business, manufacturing electronic sports scoreboards.

That was soon followed by the design, manufacture, 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. He also designed and installed numerous voting systems for legislative bodies.

Daktronics' involvement with the Olympic Games began in 1980, when Morgan served as project engineer for the firm's work in Lake Placid, N.Y. This was the first of eight Olympics the company has participated in as a major scoring and display system provider.

More than 1,000 SDSU students have worked at Daktronics during Morgan's tenure.

Dean Lew Brown says, "Despite his extraordinary workload, (Morgan) has given very generously of himself to the needs of SDSU and the College of Engineering."

Jim Morgan '69/'70, left, receives a plaque recognizing his professional achievement at the 2009 Distinguished Alumni banquet. Making the presentation is Rusty Antonen, chair of the Alumni Association board.

The thirty-fourth class of Distinguished Engineers will add two more plaques to the Wall of Fame in Crothers Engineering Hall, bringing the total to 122 persons since the award was initiated in 1977 by Dean Junis O. Storry.

To be honored at an April 16 banquet in Volstorff Ballroom in The Union are agricultural engineering graduate Richard O. Hegg '67 and physics graduate Fritz Kub '72.

HEGG HONORED FOR WORK IN AG ENGINEERING

Richard O. Hegg went from being a Bruce farm boy to a leading university educator in agricultural engineering as well as being a national program leader with the United States Department of Agriculture.

Since 1997, Hegg has overseen the Plant and Animal Systems unit within USDA's National Institute of Food and Agriculture.

In that role, Hegg manages animal manures from confined animal feeding operations to prevent air, soil, water pollution, including alternative treatment technologies and production systems, value-added products, feed management, odor control, economics, and rural community issues.

He also works on alternative energy sources from agriculture, including anaerobic digestion and feedstock logistics for cellulosic biomass.

Hegg spent twenty-three years at Clemson University, gaining professor emeritus status upon his retirement in 1998. He was head of the Department of Agricultural and Biological Engineering from 1985 to 1995.

His degrees in ag engineering came from SDSU (B.S. 1967), the University of Missouri (M.S. 1968), and the University of Minnesota (Ph.D. 1974).

In addition to his career at Clemson, Hegg also spent a year each teaching at Missouri and Minnesota.

Prior USDA experience includes six years (1969-75) as an agricultural engineer with the Agricultural Research Service in St. Paul, Minnesota.

Despite living in Arlington, Virginia, Hegg remains connected to that family farm in Bruce. It is operated by his brother James, a 1966 animal science graduate, making him the third generation to run the farm. While Richard Hegg was attending SDSU he helped charter the SDSU FarmHouse chapter and was its first president.

Hegg and his wife, Betsy, have traveled to twenty-five countries. They have two children, Richard and Shannon.

KUB HONORED FOR WORK IN POWER ELECTRONICS

Fritz J. Kub grew up on an Ipswich farm and became an industry leader in microelectronic and power electronic research. Since 1985, Kub has been a manager at the Naval Research Laboratory in Washington, D.C. He is currently the branch head of the Power Electronics Branch at the Naval Research Laboratory.

In that role, Kub directs research in developing new semiconductor material and devices for power electronic applications.

His awards include five NRL Technology Transfer Awards and two NRL Best Paper Awards. In addition, Kub has thirty-seven patents with nine of the patents licensed to commercial companies.

After earning a bachelor's degree in engineering physics from SDSU in 1972, Kub received a master's in electrical engineering from the University of Minnesota (1976) and a doctorate in electrical engineering from the University of Maryland (1985).

While at SDSU, Kub was awarded the Briggs Scholarship and the Schultz-Werth Research Award. He was also active in ROTC.

Prior to his career at the Naval Research Laboratory, Kub worked twelve years (1974-85) at Westinghouse Electric Corporation (now Northrop) in Baltimore developing Very Large Scale Integration (VLSI) integrated circuits and advanced photodetector arrays.

Kub has close ties to South Dakota. His brother Ray, a 1967 graduate from South Dakota School of Mines, operates the family farm in Ipswich, making him the fourth generation to run the farm. He has two sisters, Dorothy and Mary '71, and another brother, Andre '81.

Kub and his wife, Joan, have lived in Maryland since 1974. Joan is a 1973 graduate of the SDSU School of Nursing. She received her doctorate in public health from Johns Hopkins University and is an associate professor at Johns Hopkins University School of Nursing. They have three children, Christopher, David, and Michael.

Dave Graves

LT. COL. TODD ACKERMAN took command of the 23rd Training Squadron at Maxwell Air Force Base, Alabama, May 1.

A 1990 mechanical engineering graduate, Ackerman is commander of the Air Force Commissioned Officer Training and Reserved Commissioner Officer Training programs, providing initial leadership training for 1,300 newly commissioned chaplains, health professionals, and judge advocates each year.

Ackerman, who had previously been stationed at Lackland Air Force Base, Texas, is married with four children.

RICHARD G. ADAMSKI '58 died April 23, 2009, in Davis, California.

Adamski, 77, of Davis, was born July 31, 1931, and was raised in Sturgis. After high school he joined the South Dakota National Guard and operated heavy equipment, helping to build the interstate highway system. He earned his degree in industrial arts and was commissioned into the U.S. Army following graduation. During his twenty-year military career, Adamski included service with the Corps of Engineers and as a Huey helicopter pilot.

After leaving the military he managed a savings and loan and was a substitute teacher. Survivors include his wife, Rosemary, two sons and two daughters.

AARON NORMAN '02 and Jill Akland '03 and were married March 7, 2009, at Central Baptist Church in Sioux Falls.

The bride has a degree in dietetics and is the director of dining services at SDSU. The groom earned a degree in civil engineering and works as an engineer and land surveyor at Stockwell Engineers in Sioux Falls.

The couple lives in Sioux Falls.

FRANCES JEAN (MILLER) ANDERSON '59 died April 25, 2009, at Clare Bridge of North Oaks, Minnesota, after a long illness.

Anderson, 72, grew up in Redfield and received degrees in physics from State (bachelor's) and the University of Minnesota (master's and doctorate). While teaching in math at State as an undergraduate, she met her future husband, Willard, who was teaching math as a graduate student.

Listed among her survivors are her husband and "dear professor friend George H. Duffey," a retired SDSU professor.

KENNETH CHRISTIANSON '50/'58 died April 14, 2009, in Tucson, Arizona, due to complications following surgery for a broken hip.

Christianson, 84, earned a degree in mechanical engineering and after working in the field for several years returned to SDSU to work on a graduate degree in mechanical engineering. He was appointed as an instructor in 1955 and moved up through the ranks, becoming a full professor in 1976. He retired in spring 1989 and moved to Tucson.

He is survived by his son, Kim, of Tucson; two grandsons, two sisters, and a brother. He was preceded in death by his wife, Doris.

JAMES E. (JIM) DEVANEY, a 1962 civil engineering graduate, died February 20, 2009.

DeVaney, 69, a retired colonel in the U.S. Air Force, spent thirty years in military, retiring in 1992. In 1993, they moved to West Lafayette, Indiana, where his wife joined the faculty of Purdue University. While there, he drew the floor plan for the couple's retirement home in Monument, Colorado, where he moved in October 2007.

Sharon retired in May 2008 and joined her husband. Survivors include his wife of forty-seven years, three children, four grandchildren, three sisters, and two brothers.

THOMAS DRAKE '76/'78 began work January 11 as city engineer in Watertown. He has twenty-six years experience as a municipal engineer in Faribault and Red Wing, Minnesota. His bachelor's degree was in civil engineering while his master's in engineering had an environmental emphasis.

JAMES LEE HAIGH '00 died September 30, 2009, in his Watertown home.

Haigh, 57, graduated from Watertown High School in 1970 and worked as a sheet metal mechanic and craftsman in sign manufacturing and then was a middle manager in sign manufacturing. He enrolled at North Dakota State College of Science and then earned a degree in electrical engineering from SDSU.

Most recently he had been an electrical engineer at Western Area Power Administration.

Survivors include two stepchildren, two grandchildren, two brothers, and a sister.

Graduate student **MATT HEIN** '08, Brookings, was awarded a $2,000 scholarship to attend the American Wind Energy Association annual conference in Chicago May 4-8, 2009. Hein's scholarship was based on his work and support of the South Dakota Wind Energy Association.

Hein developed a model to analyze the affect of harsh climate on wind turbines. His analysis of transverse vibration using MATLAB code made unbiased conclusions about large wind turbine safety. Hein also developed the South Dakota Wind Energy Association Web site—www.sdwind.org.

LARRY GENE KRULL '67 died July 7 in Ogden, Utah, following a brief illness.

Krull, 65, earned a degree in mechanical engineering and was commissioned into the U.S. Air Force. The Sioux Falls native served in the Air Force and Air Force Reserves until 1997, when he worked as a civil service engineer until retiring in 2006. Survivors include his wife, Judy Ann (Gudmundson), a son, six grandchildren, two brothers, and a sister.

EVERETT H. LEE '38 died November 3, 2009, in Rock Island, Illinois.

The Volga native was an electrical engineering major who had a long career in the product planning department at Deere & Co. Prior to joining Deere, he farmed in South Dakota. He married Monica R. O'Connor July 16, 1939, in Britton. She died February 19, 2005. The 94-year-old Rock Island resident was survived by two sons, two daughters, and a sister. He was preceded in death by a sister and two brothers.

CLIFTON MALCOLM NOCK '91 died July 15, 2009, at his home in Highlands Ranch, Colorado.

Nock, 49, was a Lincoln High School graduate who earned a degree in computer science and then received his master's from the University of Minnesota. He worked as a software architect for IBM and Oracle as well as writing the book *Data Access Patterns*.

He married Angela Donaldson in Sioux Falls in 1992. Survivors include his wife and five children, all at home.

MATTHEW RABA '01 math education, has been hired as the new principal at Belle Fourche High School. The New Underwood native has been teaching there the last eight years.

MORGAN E. RICHARDS '53 died September 21, 2009, at the Iowa Veterans Home in Marshalltown.

Originally from Ipswich, Richards took ROTC training at State and entered the Air Force as a second lieutenant. After leaving the military, he worked in

Colorado, California, Saudi Arabia, and the United Kingdom before moving to Des Moines, Iowa, in 1987.

He was survived by a brother, four nieces, and three nephews. He was preceded in death by two sons, a brother, and a sister.

LISA ROBINSON '09, originally of Rapid City, married Dusty Snyders May 23, 2009, at Placerville Church of Christ in the Black Hills.

The bride is a civil engineering graduate who earned her master's degree in environmental engineering in December. The couple lives in Brookings.

ROBERT SOPER '04, originally of Brandon, married Melanie Algood June 20, 2009, at First Lutheran Church, Brookings.

He holds a degree in electrical engineering and works with Western Area Power Administration. The couple lives in Sioux Falls.

LANSFORD E. TRAPP '48 died April 11, 2009, at Brookview Manor in Brookings. Trapp, 90, of Brookings, earned a degree in engineering physics and followed that up with a master's degree in math and physics at Kansas State in 1950. In 1951, he was called back into the Air Force, where he served for the next sixteen years.

From 1967 to 1983, Trapp taught math at SDSU. In his retirement, he and his wife, Frances, spent fifteen winters in New Braunfels, Texas.

During his military career, which included service with the Army Air Corp from 1939 to 1945, Trapp amassed more than 6,000 flying hours as a senior navigator and command pilot. After a fourteen-month tour of duty in Vietnam, he served as a direct adviser to the Secretary of Defense in the Pentagon.

Trapp is survived by his wife of sixty-five years, six children, fourteen grandchildren, and a sister.

JONATHAN WIEGAND '05 and Michelle Koepsell were married July 11, 2009, at Family of Christ Church in Chanhassen, Minnesota. Wiegand, originally of Grand Island, Nebraska, is a transportation engineer for the Federal Highway Department. The couple lives in Gretna, Nebraska.

JIM WILCOX '76, manager of government and regulatory affairs for Xcel Energy in Sioux Falls, received the Spirit of Sioux Falls Award from the Sioux Falls Development Foundation November 19.

Wilcox served as foundation chairman in 2004-05 and continues to be a tireless, behind-the-scenes promoter to bring industry to the Sioux Empire, according to his nominators. He came to Sioux Falls in 1980 to work for the late Angus Anson for what was then Northern State Power.

The award is given annually to a person who has demonstrated leadership and commitment to economic development.

Schmieding's efforts

help increase female enrollment

A special moment takes place during the November 2009 Ready SET-Go! workshop for high school girls when Becky Schmieding is presented with a plaque for her work in organizing the event. On hand for the presentation are, from left, Honors College Dean Timothy Nichols, Schmieding, Assistant Dean of Engineering Richard Reid, and Provost and Vice President of Academic Affairs Laurie Stenberg Nichols.

Engineering students are often among SDSU's best and brightest.

As a recruiter for IBM, now retired, Becky Schmieding '78 regularly made a presentation to the freshmen class of the College of Engineering. She would look out on the bright, fresh-faced students and, ultimately, did not like what she saw.

"When making the presentation I had a chance to look over the freshmen and it was disheartening to see that there were only eight to ten females in a class of between 100 and 200 students, not just one year but for a couple years in a row," Schmieding says. "IBM prides itself in the diversity of its population of employees, and I felt that if IBM were to continue to recruit at SDSU it was imperative that there be diversity in the population of engineering students."

Schmieding explains that the lack of diversity in engineering classes was not only at SDSU but part of a national trend. IBM tried to reverse the trend by holding seminars at its locations, but Schmieding believed she would get better results by conducting the workshops at the schools where she recruited.

"After all," Schmieding says, "if I could help increase the pipeline of females in the University, I could help increase the pipeline of females in IBM."

To make that happen, in partnership with the College of Engineering and local employers, Schmieding led the development of two workshops. GEMS, which stands for Girls, Engineering, Mathematics and Science, was designed for eighth-grade girls and has been presented at SDSU every March since 2006. Another workshop for high school girls, Ready SET-Go!, with SET standing for Science, Engineering, and Technology, has been held each November since 2006.

The one-day workshops are designed to introduce female students, their parents, and teachers to careers in science and technology through hands-on projects and interaction with females from industry and College of Engineering faculty and female students.

After three years, the results of the workshops are encouraging. In that time, the number of female students in the College of Engineering has increased from 7.6 percent to 11.2 percent of the total engineering student body.

"Becky's efforts to expose young women to the opportunities available in science, technology, engineering, and mathematics cannot be overstated," says Assistant Dean Richard Reid. "She has identified a need in our

profession, and she had taken a significant amount of her time and energy to take action and do something about it."

Honored at the last Ready SET-Go! event for her efforts, Schmieding, now a project manager in genomic research for the Mayo Clinic, is quick to pass the credit on to others, noting the key contributions in financing and support from numerous companies, some of their female engineers, and faculty and female students in the College of Engineering.

Adding more women to the engineering field is far more than a diversity numbers game. Women in engineering bring special attributes to the profession, says Reid.

"The creativity of individuals is significantly influenced by their life experiences and women bring to engineering a different set of life experiences than men," Reid says. "If our engineering design teams are not diverse, then our range of solutions to a problem will be smaller."

Dana Hess

The following have helped fund engineering workshops sponsored by SDSU for area girls:

Banner Consulting Engineers and Architects,

Daktronics,

DeWild Grant Reckert and Associates Company,

East River Electric Power Cooperative,

Howard R. Green Company,

IBM,

Mid-American Energy,

Natural Resources Conservation Service,

Sencore.

Dispelling myths about women in engineering

Becky Schmieding has devoted a considerable amount of her time and energy to the task of bringing more female students into engineering. It's not easy, particularly since there are often myths about the profession that hinder female high school students from pursuing an engineering degree.

According to Schmieding, these myths stand in the way:

Myths about the job — According to Schmieding, there's a mistaken belief that engineering jobs are either desk jobs in which there's more interaction with a computer than there is with other people or they're dirt and mud jobs.

"By holding these workshops, we expose female high school students to the truth about engineering jobs where the majority of an engineer's time is spent interacting with others," Schmieding explains.

Myths about job opportunities — Schmieding knows there are concerns about jobs being moved offshore.

"We can show statistics that the United States companies offshore primarily because there aren't enough engineers in the United States," Schmieding says. "In fact, the U.S. government considers technology degrees important to the success of the United States. Not only that, but engineers are some of the highest paid professions for people holding only a bachelor's degree."

Myths about engineers — High school students need to be shown that the engineering profession is not populated by nerds.

"That's why it's so important to have the high school students interact with the female engineering majors," Schmieding says. "It shows them that these young women aren't nerds. Instead these young women are smart, intelligent, personable, and beautiful on the inside as well as the outside. You don't have to be a nerd nor do you have to be an A student to have a great job as an engineer."

Dana Hess

While Becky Schmieding, right, watches, Instructor Jeannette Gibbons puts Ready SET-Go! workshop participants through their paces as they work on creating an animated movie. Other projects designed to interest female high school students in engineering careers were an introduction to the best gas mixtures for powering rockets and designing a video display for a multiuse arena.

Study Room

created at State for SDSU-FIS Success Academy scholars

South Dakota State University-Flandreau Indian School Success Academy scholars now have a place of their own at SDSU.

A twelve-by-twenty-foot study room in Harding Hall was dedicated during a brief ceremony December 10. The space had been a conference room for the Electrical Engineering Department, but when the department moved to a new building south of Harding Hall the room became available.

The poorly lit conference room underwent major remodeling, according to Rich Reid, assistant dean of the College of Engineering.

Financing came from the Citi Foundation, which was represented at the dedication by Jerry Nachtigal, a 1981 SDSU graduate who now serves as senior vice president for public affairs with Citibank in Sioux Falls. Citibank has helped support the Success Academy for most of its nine years.

SDSU-Flandreau Indian School Success Academy is an early and intensive college preparatory program involving all of the students, freshmen through seniors, who attend FIS. Flandreau Indian School is a federal Bureau of Indian Education high school twenty-five miles southeast of Brookings.

Citi finances remodeling

For the past five academic years, Citi Foundation funds have enabled ten FIS seniors to take one college class per semester at SDSU while completing their last year of high school. A $15,000 annual grant covered those costs plus the remodeling of Room 200 in Harding Hall.

Work completed this fall includes a new ceiling, flooring, and lighting as well as six laptops, a printer, a white board, an air conditioner, chairs, and framed photos of powwows in North and South Dakota. A table, seating twelve, was left behind by the Electrical Engineering Department when it moved. A star quilt adorns one wall.

The Success Academy has two goals—to help more American Indian students prepare for and succeed in college, and to make SDSU the kind of place where that happens. All FIS freshmen and sophomores visit SDSU for eleven full-day visits each school year. Twenty-five college-bound juniors participate in a four-session program each spring titled "Preparing for College, Native Style."

By their senior year at the boarding school, ten scholars are selected to take college classes and take steps necessary for college admission.

Sandy Koester, the assistant principal at Flandreau Indian School, coordinates Success Academy with MaryJo Benton Lee, diversity coordinator with the College of Engineering. Both spoke at the dedication, which was opened with a Lakota prayer by Valerian Three Irons with the Diversity Enhancement Office at SDSU.

"This is a room that speaks. It expresses to Natives and non-Natives alike the profound significance of American Indian culture to our state, to our University, and to our very being."

— MaryJo Benton Lee,
diversity coordinator for the College

,'Very powerful program'

Koester, a 30-year veteran at FIS, says the school didn't have a college prep program before Success Academy.

"This is a very powerful program for our students. I still get calls, letters, and e-mails from students saying I still remember visiting SDSU. They may now be attending another college, but they're still in college. They say, 'I never dreamed of it because I didn't think it was in the cards for me before Success Academy,'" Koester says.

"This is a room that speaks," Lee says at the dedication. "It expresses to Natives and non-Natives alike the profound significance of American Indian culture to our state, to our University, and to our very being."

The room will be used primarily for two purposes—the college classes for Success Academy seniors still attending FIS and study tables for Success Academy scholars currently attending SDSU.

Previously, the students used a shared space in the journalism building.

Dave Graves

MaryJo Benton Lee, diversity coordinator for the South Dakota State University College of Engineering, addresses a gathering at the December 10, 2009, dedication of a study room for students in the SDSU-Flandreau Indian School Success Academy. The room in Harding Hall had been used by the Electrical Engineering Department, which moved to a new building in spring 2009.

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