



Impulse

College of Engineering

South Dakota State University

Spring 2006, Vol. 4, No. 1

DAKTRON

First Bank & Trust

FROST ARENA

JACKS	37	1 Pts	10 0 7	22 0 10	31 2 7	40 2 2	44 2 4
BISON	38	F Pts	4 1 0	22 0 7	50 2 13	54 2 10	
Team	2	Field	54 - 2	Team	3		

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Dear alumni and friends:

As this issue reaches you, we have just completed another outstanding and historic year for SDSU and the College of Engineering! One year ago, I mentioned that history would show 2004 as a historic year and turning point for our graduate education programming with the approval of two new Ph.D. programs. With the recent approval of a third doctoral program, the Ph.D. in Electrical Engineering, we have again made history for the College, SDSU, and even South Dakota. The Lighting the Way article will explain this significance.

How do you like the front cover? If you haven't seen the new SDSU scoreboard systems, you cannot fully appreciate the new experience of events at both Coughlin Stadium and Frost Arena. The Daktronics system has elevated the experience of fans to new audio and visual levels. As the article explains, the new system also incorporates an educational component for some of the many Daktronics personnel who are full-time SDSU students.

An important element of our College strategy is to seek program-specific accreditation for all of our academic majors. In this issue, you will read about the first of our unaccredited programs to achieve this milestone, the Construction Management program. Their successful ACCE accreditation this year is a real milestone and tribute to the high quality of their program.

In this issue, you will also read about some of the many special activities of the College of Engineering, including distinguished lectures, student inspection trips to industry, and, of course, features on our new faculty members and some of our most successful students and alumni.

I am very pleased to feature in this issue a special article on our Dean's Advisory Council members. You will learn more about who these individuals are that give so much of themselves to ensure the continued excellence of the College of Engineering.

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 helping us continue to produce the best graduates in mathematics, engineering, science, and technology. Your financial support is part of the lifeblood and success 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



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State's home field is a winning base for the world's leader in scoreboard technology.

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Cover photo by Eric Landwehr.

■ Impulse

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New Scoreboards put Jacks, alums on high-tech display

Home field advantage is conducive to winning championships. It's also a winning base for the world's leader in scoreboard technology.

Daktronics' reputation is nationally known, and every time the manufacturer of electronic displays and large screen video systems makes an installation, it brings a big smile to SDSU and the College.

That's because a good portion of Daktronics employees are engineering alums. Their job is to produce the best scoreboards in use today, and now their most recent prize is functioning in the backyard of their alma mater, specifically new scoring and video systems at Coughlin Alumni Stadium and Frost Arena.

"Oh, it's a tremendous thing," beams Kirk Simet, Daktronics National Sales Manager and 1980 graduate. "It's one of the biggest systems in the country. From a design standpoint, it's the most unique system that Daktronics has ever done.

"It incorporates all the top features that Daktronics has for technology and sports marketing services," adds Simet, a 1978 national wrestling champion for the Jacks. "It will have a major impact. Seriously, it ranks among the top twenty systems in the United States for colleges and universities in sheer magnitude."

Alumni sense of pride

The state-of-the-art scoreboards bring a new atmosphere and energy to both Coughlin Alumni Stadium and Frost Arena, especially since the old boards had been in operation since the 1970s. The original Frost scoreboard was installed when the building was built in 1973, while the football scoreboard was erected in 1977.

A shot of adrenaline went through Lane Munson's veins when the manager of the Daktronics Video Products Manufacturing Department was informed of the new systems being planned for the athletic department.

"All Daktronics' personnel, not only us alumni, felt a great deal of pride and accomplishment when this contract came through," he says. "We also placed a little extra pressure on ourselves to ensure that everything would go fine during that first Jacks football game. A great deal of effort was put forth in a short amount of time by manufacturing, engineering, and installers."

Coughlin Alumni's latest piece of technology is almost six times wider than its predecessor, measuring 121 feet wide and fifty-six feet high. In the center is a seventeen-by-twenty-eight-foot video board that is used for in-game broadcasts, replays, and advertisements.

The board houses the game play clock, and it maintains running totals of each team's rushing, passing, and total offensive yardage numbers. In addition, there are television monitors and displays near the concession stands that highlight Jackrabbit football.

At SDSU's first football game of the season, Munson and his son strolled around the stadium, taking time to gaze at the scoreboard from different angles. He liked what he helped create.

"I was mostly looking for fan reaction," says the 1991 electronic engineering technology graduate. "I could overhear many comments regarding how much of an impact the video, scoring, and sound systems were making. The reactions were all very positive."

Imposing electronics

In Frost Arena, there's a four-sided Prostar® video display basketball scoreboard hanging above the court. Measuring thirty-by-sixteen feet, it features a rotating sponsors board and has a spotlight in the center to shine on wrestling matches.

Each board has ten-millimeter pixel spacing, which means more light emitting diodes [LED] are in use, according to Tom Coughlin, the north central region manager of the Daktronics' Sports Marketing division.

"The tighter the spacing, the better the picture on the screen," he says. "SDSU is one of the few universities to have ten-millimeter Prostar® boards."

Located on the east and west ends of the arena are sixty-foot wide by four-foot high pro-ad video strips. They keep up-to-date team and player statistics along with advertising, player profiles, and fan interaction pieces. The thirty-seven foot long scorer's table is digital. It features a full-color LED matrix and can be programmed for a variety of uses similar to the pro-ad strips.

"These are among the finest systems on college campuses today," cites Coughlin, a 1988 broadcast journalism grad. "SDSU is one of a handful of schools at any level to have this kind of technology."

"Frost Arena, in particular, is among the first to utilize these types of video boards and scorer's tables," he adds. "When Division I basketball teams enter the arena, they are going to be surprised."

Keyframe®, a division of Daktronics, operates the scoreboard systems at both Coughlin Alumni and Frost Arena. With a staff of ten to twelve, they are responsible for game-day production and all video and advertising content.

Showing the best

Daktronics technology impacted other Jackrabbit sports as well. The package includes a wrestling scoreboard, a timing system for swimming, a scoreboard for the new softball complex north of Coughlin, and upgrades to the current baseball scoreboard.

Murals featuring photos of former Jackrabbit student-athletes hang in the walkways and concession areas of Coughlin Alumni Stadium and Frost Arena. Inscribed with a corporate sponsor's name, the murals feature all twenty-one sports and they add color and excitement in the facilities.

"Watching the scoreboards go up was very exciting to see," says Daktronics Project Manager Scott King, a 2004 electronic engineering technology grad. "It makes me proud to see the school growing and keeping up with other Division I schools."

"A neat concept was putting pictures of athletes on the displays and in the buildings. It makes everyone proud to walk under a twenty-foot picture of one of your fellow student-athletes."

"This project was a way to show how the University and Daktronics can depend on each other," he says. "SDSU is now a premier venue for athletic events in Division I. Even though SDSU only has 11,000 students, the facilities and displays are better than some 30,000-student universities. It also gives Daktronics a chance to show off some of its best products."

The video components of the scoreboards will also be used for non-sporting events as well, like graduation ceremonies, concerts, conventions, and banquets.

"We all worked together on a project that will be good for the student-athletes, the fans, and the corporate partners," says Coughlin. "The fan and student-athlete reaction to the systems is what we expected. Given the scope of the project, we knew that it was going to be thrilling and I think it is."

Kyle Johnson



Major corporate sponsors

The Daktronics scoreboard package has a \$3 million price tag, which will be paid for through current and future gifts to the SDSU Foundation. The scoreboard package has four anchor corporate sponsors: Avera Brookings Medical Clinic, Coca-Cola, Daktronics, and First Bank and Trust.

In total, there will be twenty corporate partners supporting the project. With their backing, sponsorship revenue to the athletic department is expected to increase more than 250 percent this academic year.

"We're really investing money to expand the value of those gifts," says Athletic Director Fred Oien. "After a few years working on this project, we finalized what we wanted in the venues and did it in a way that enhances and benefits the program financially."

Assistant Athletic Director Keith Mahlum, who oversees major donations to the athletic department, says, "We covered all the bases that we wanted in terms of the scope of the project, including enhancements to the venues. And in terms of the facilities, this project puts us on par or ahead of other Division I universities around the country that we will be competing against."

Kyle Johnson

Lighting the way

New electrical engineering doctorate to focus on photovoltaics

Lights are shining on the College thanks to action by the Board of Regents on December 15, 2005, and those lights are being powered by the sun.

Following action by the State Legislature this winter, the College has been funded to begin a doctorate program in electrical engineering with the focus beamed on photovoltaics. It is the third doctorate housed within the College and the ninth doctoral program at SDSU.

Just a year earlier, the College's first two doctorates—geospatial science and engineering, and computational science and statistics—were approved by the Regents.

The electrical engineering doctorate is the result of long years of preparation by Dean Lew Brown. A proposal for a doctorate in engineering took a couple forms, but came to shape following a September 30, 2005, visit by external reviewers from Washington State and the University of South Carolina.

They recommended that the degree be granted in the broad area of electrical engineering, rather than one specific area of research within that discipline.

However, "Initially, all of our focus will be in photovoltaics," says Associate Professor Mike Ropp, the campus expert in photovoltaics.

Program finances

Given the limited resources, excellence won't be achieved without focusing funds on a specific research area, Ropp says.

Governor Mike Rounds budgeted \$600,000 to fund three new faculty researchers, six doctoral graduate assistants, and operating expenses. The College will redirect \$75,000 annually in internal resources for the next five years to support the program.

Brown says, "This \$600,000 investment by the state for the doctorate in electrical



Jeff Moore, cleanroom technician in the Department of Electrical Engineering and Computer Science, works on the RF sputtering system in the Solberg Hall Annex. The RF sputtering system allows well-controlled deposition of thin films of materials. The lab, originated in 1982 and expanded in 1992, will be the site of much of the research work associated with a new doctorate in electrical engineering.

engineering will mean millions of dollars of externally funded research and economic development impact on South Dakota. And that's not even talking about the results of the research. This is going to be a big net gain for South Dakota, not just an expense."

Ropp will oversee the program with Professor David Galipeau, graduate coordinator for the electrical engineering program.

"We intend for this program to be self-supporting," Ropp notes. "We must bring in grants to pay for student hires, equipment, and what is needed to keep us on the cutting edge." The scientists already are lining up National Science Foundation

funding to help start the program and state funds will be sought for equipment, Ropp says.

In the long term

New researchers will be writing more proposals for additional equipment, says Ropp, who has focused research on photovoltaic systems and devices.

The long-term impact of the photovoltaic research, the brass ring, as Ropp describes it, is to "commercialize our research, particularly in Brookings. Most of the photovoltaics industry is on the coasts. I think there will be a lot of commercial

pho•to•vol•ta•ics | fōtəvōl'tāiks;

The conversion of light to electrical energy.

interest in what we do and some of that will be out of state.”

Harvesting the energy light for useful purposes has been a drive of Ropp's since his grad student days a dozen years ago.

Ropp took an unconventional approach to earning his doctorate in electrical engineering from Georgia Tech. He first graduated from the University of Nebraska in Lincoln with a music performance degree. A passion to be part of the energy solution sent him to grad school.

Enrollment projections

The half-dozen students initially expected to enter the SDSU doctoral program may come from everywhere under the sun.

Galipeau says, “We're expecting to be doing national advertising in professional journals [for the graduate assistantships]. I don't think we'll have much trouble getting people because we do have competitive stipends.”

Unlike the doctorate in geospatial science, which drew students from EROS Data Center, there is not a local feeder with the electrical engineering doctorate.

The undergraduate program

While Ropp has a long history in photovoltaic research and Galipeau has been working in micro-fabrication of electronic devices since 1992, the College's academic program in photovoltaics is micro itself. There is one senior-level, tech-elective class.

But the principles from other areas can be transferred to photovoltaics, especially Galipeau's standard materials and devices class, which includes a unit on photovoltaics. The new doctorate will open up opportunities for undergraduate research assistantships.

Clearly, though, photovoltaics wasn't chosen for a doctoral specialization because of the College's undergraduate core in that area.

“A PhD is a research-based degree, so it grew out of the research,” says Ropp.

Galipeau adds, “We were doing good enough research that they [the outside reviewers] liked what we were doing. You can't have a doctorate without research that is going on at a PhD level. That the outside reviewers recognized this area speaks well for the research we're doing.”

Adding a new focus

Ropp's research has been based on physics; the interactions of light with matter, he explains. Galipeau has focused on chemical research and the fabrication of micro-sensing devices.

Now he is transitioning his research to light sensors. This spring Galipeau is on sabbatical, writing proposals and doing literature searches on new photovoltaic work, he reports. The program's new researchers will “apply their ideas to areas we've already identified,” Galipeau says.

Ropp explains, “Our research is dedicated to making photovoltaics less expensive. It already is reliable.”

The aim is to get high performance at low cost.

“New understanding at the nano scale is the way to do that. That is the area we're targeting right now,” says Ropp, who notes the work is being done in the “clean” room at the Solberg Hall Annex. That lab originated in 1982 and was expanded in 1992 to include micro-electron devices.

The clean room is just that. Just a speck of dust can destroy devices being fabricated there, Ropp explains.

A recent \$250,000 grant from the National Science Foundation provided the lab with new equipment, including a scanning electron microscope that allows for the manufacture of nano-sized structures, Galipeau says. Nano is one-millionth of a centimeter, which is .039 millionths of an inch. That is much smaller than a human hair. In fact, some nanometer-scale devices may only be a few tens of atoms across.

Working outside the College, State

The concepts in photovoltaics are “extremely interdisciplinary,” Ropp says.

For example, with existing photovoltaic research at State, there is cooperation with the Chemistry and Mechanical Engineering departments at SDSU, the Chemistry Department at the University of South Dakota, and the Electrical Engineering Science and Materials Department at the School of Mines and Technology.

Ropp adds, “We would like to see a photovoltaics industry spring up here” and eventually aid the program financially.

Much like the work in nano-technology, Ropp concludes, “The vision is very big, but the foundations aren't there yet.”

Dave Graves

The EE PhD

What: A doctorate in electrical engineering, obtained through studying ways to make photovoltaics a less expensive energy option.

Faculty size: Five to six, depending on grant funding.

Department head: Dennis Helder

Expected first-year enrollment: Six, eventually reaching ten to twenty.

Research description: “Third generation” photovoltaics, exploring the energy conversion potential of advanced approaches, such as high performance thin-films, for improving photovoltaic performance.

Classes begin: Tentatively set for fall 2006

Minor approved in biomedical engineering

Engineering students have been taking the courses for three decades, but could never call it more than an emphasis. As of January 1, students can now earn an undergraduate minor degree in biomedical engineering from State.

"This is a formal credential for something that we've been doing for a long time," says Dean Lewis Brown. "We've been offering courses in biomedical engineering for thirty years. We've had students doing this for years, they just couldn't call it a minor." The Board of Regents approved the new degree at its December meeting.

Biomedical engineering is a field that is growing at an incredible rate.

"This is a hot field," Brown says. "The health care industry, in general, will see continued growth. Health care will need more engineers working in the health industry than was ever needed before. This new degree will help attract students to SDSU to study and go to work in the biomedical industry."

Students studying biomedical engineering typically have an interest in both engineering and the life sciences, especially medicine. SDSU students who took extra courses to prepare for careers in biomedical engineering are now working in such areas as medical instrumentation design, biomedical communications and digital signal processing, and medical device research and development. Some have continued their education in graduate school programs in medicine and/or biomedical engineering to begin a career in medical and biomedical research.

Carrie Hruska of Madison, who graduated from State in 2002 with an

electrical engineering major and an emphasis in biomedical engineering, is now enrolled in the PhD program at the graduate school within the Mayo Clinic College of Medicine. She works in the Department of Nuclear Medicine, where she's working on a project on breast

it's too late. When you already have that minor going in, you can structure your classes sooner.

"It also gives validation. Having the minor probably would have helped with the admissions process at graduate school. To designate it would definitely make a

"The health care industry, in general, will see continued growth. Health care will need more engineers working in the health industry than was ever needed before. This new degree will help attract students to SDSU to study and go to work in the biomedical industry."

Dean Lewis Brown

imaging, researching a new technique for early detection for women at high risk for breast cancer. After graduating in June 2007, she hopes to work as a medical physicist and continue clinical research.

Had the biomedical engineering minor been offered when she was at State, Hruska feels she would have more effectively structured her coursework.

"It probably would have provided me with a little more direction in what to take," she says. "I felt like I was just kind of searching for what would apply for biomedical engineering. Sometimes you don't even think of courses you need until

difference to people who are looking at your application. Sometimes they don't know whether you have any biology background. When you say you have a minor in biomedical engineering, that just says it right there. I also think it's good exposure for the engineering program and I think you'll get more students interested in it that wouldn't have considered engineering before."

Although women are minority members of the engineering field in general, such is not the case for biomedical engineering.

New doctorate top enrollment projections

“There are a lot more women,” Hruska says. “When I went to State, there was only one woman in my class. Here, it’s about half women. So that’s a big change for me. It’s such a different field. Biomedical engineering is an exciting collaboration of many different areas—physics, biology, chemistry, and many more.”

According to Dean Brown, since biomedical engineering is an application of traditional engineering to the life sciences, and not a distinct discipline of its own, it is important for a student with an interest in biomedical engineering to complete an undergraduate degree in the traditional engineering discipline of his or her interest. Most biomedical engineers have backgrounds and degrees in traditional engineering disciplines, such as electrical or mechanical engineering, or physics. While it is possible to obtain an undergraduate degree in biomedical engineering at some institutions, a student receives a stronger engineering background by completing the traditional engineering degree and enhancing it with extra life science and biomedical studies.

Cindy Rickeman

Classes began in fall 2005 for the College’s first two doctoral programs and have scored favorable marks, especially in Geospatial Science and Engineering.

Eight students were planned for fall 2005, but the program drew fifteen students.

“The Geospatial Science and Engineering program has gotten off to an excellent start,” understates Dennis Helder, head of the Department of Electrical Engineering and Computer Science, which shares the program with the Geography Department.

In fall semester 2005, Introduction to Geospatial Science and Engineering drew nineteen students in the class.

“There is a large group from EROS Data Center, several graduate students from the [SDSU] GISc Center, and several graduate students from the Image Processing Lab.

“This course is a fine example of the multi-disciplinary nature of the program in that it was team taught by Janet Gritzner from Geography, Tom Loveland from EROS, Matt Hansen, director of the GISc Center, and myself,” Helder says.

Part of the reason for the success of this program is that it builds on several already well-developed entities—EROS and the SDSU Image Processing Lab—and the attraction of the new GISc Center, Helder says.

For more information:

Geospatial Science and Engineering

www3.sdstate.edu/Academics/GraduateSchool/InterdisciplinaryPrograms/redirect/GSE/Index.cfm

Computational Science and Statistics

www3.sdstate.edu/Academics/CollegeOfEngineering/MathematicsandStatistics/PhDProgram/Index.cfm

“I predict the program will continue to grow during the next few years,” Helder says.

The program requires ninety credits with at least sixty of them to be beyond the master’s level.

Numbers in the Computational Science and Statistics program are less spectacular, but still are above projection.

It was anticipated that the program would start with three students. Five students were admitted. There are four in the program now after one student had to drop out for personal reasons.

“We’re excited about the the program’s great start. We’ve gone from zero to sixty in a hurry”, says Kurt Cogswell, head of the Department of Mathematics and Statistics. “Faculty and graduate students in the Computational Science and Statistics program are already collaborating with researchers from half a dozen programs and departments across campus as well as all three hospitals in Sioux Falls.

“As we add faculty and resources, we expect the program to make a significant contribution to research, development, and economic growth in the region.”

The program requires sixty credits beyond the master’s level.

Dave Graves



Construction Management

program gets 'big gold star'

The first and only construction management program in South Dakota can now add accreditation to its credentials.

The American Council for Construction Education (ACCE) accredited the College's construction management program for the maximum five-year term.

"ACCE is the accrediting body for construction management programs across the United States and we now stand in those ranks," says Dr. Teresa Hall, head of the Department of Engineering Technology and Management. "This is a big gold star under specialized accreditation for ETM academic programs. We are just delighted our hard work paid off."

The ACCE accreditation procedure starts with the self study, which covers everything from curriculum to faculty to financing to University and industry support. From this document, the ACCE accreditation board determines whether the

program meets basic accreditation requirements. If so, a team visit is scheduled. The accreditation team is comprised of educators and managers from the construction industry.

"The visiting team industry member is critical to the process," Hall says. "This way, the program is also reviewed from an employer needs perspective."

During the three-day visit, the team examines all course materials, meets with University officials, faculty, and students, and tours the facilities.

"They look at the whole ball of wax," says Pat Pannell, Construction Management program coordinator. "They do a very thorough investigation. It's a high-pressure event for the program and the visiting team."

The program was praised for its strength in several areas.

"They noticed the enthusiasm of the faculty, they liked our industry support.

The team had very positive student input and they were impressed with our students as well," Pannell says. "And they liked the facility. Before Solberg Hall was renovated to house the ETM Department, we were holding classes all over campus in less than desirable space. Bringing the ETM programs together in a cohesive unit creates a real *esprit de corps*."

That group spirit is a huge part of what brought accreditation for the ten year old program to fruition.

"Teresa is a hard worker," Pannell says. "If you tell her you need something, she'll work to get it done. She's definitely not an armchair quarterback. You need someone above you encouraging you. Between her and the dean [Lewis Brown], they definitely made a point that they're 100 percent behind accreditation. That's why it finally all came together."

Hall has equally high regard for Pannell. "Pat is the experienced industry



Pictured on campus for a meeting on the Construction Management Program are Construction Management Advisory Council members Gerry Johnson and Larry Zikmund, in left photo, opposite page, and Dean Lewis Brown, in photo above left.

The photos at right, opposite page, and at right above, were taken during the remodeling of Solberg Hall, which houses the Construction Management program. The facilities received high marks from the accreditation team. "Bringing the Engineering and Technology Management programs together in a cohesive unit creates a real *esprit de corps*," says Construction Management program coordinator Pat Pannell.

professional we needed to bring this program to the next level," she says. "I liked the ideas that he had to improve the program and we made it work. We're lucky to have him here at SDSU. He was the key player that brought all the pieces together and is why we are accredited today."

As a result, they have a quality, growing program that's filling a major industry need.

"We were planning on fifty incoming freshmen and we now have sixty-five in the introductory class," Hall says. "An early estimate for this fall is somewhere near 140 majors. We were at 126 students this spring. We've seen a phenomenal growth pattern over the last five to seven years and we're still on that track."

Good news, considering the current industry need for construction managers.

"The homebuilding, commercial, and transportation industry is growing by leaps and bounds," Hall says. "Construction management grads are highly sought after. It's a very competitive market right now."

Graduates work in a variety of professional management positions, from

entry-level white-collar project managers to construction site supervisors.

"In general, they're managing resources, whether it's materials, people, or time," Hall explains. "Our graduates are management professionals going into highly rewarding careers, either in their own business, working for a small company, or large multinational corporations. They are well prepared and ready to contribute to the well being of the company."

A step toward those professional positions involves internships and SDSU has implemented a unique way to better serve students. This summer, associate professor David Wahlstrom traveled across South Dakota and to Wyoming, Colorado, and Nevada to visit student interns at their field sites.

"This is an innovative way to connect with companies," Hall says. "We see it as a give-and-take visit by our faculty. We check to see how the students are doing and it gives us the opportunity to promote the SDSU construction management program."

"Managers are very impressed when we show up and ask how we can better meet

their future internship and employment needs. Very few programs do this."

They're also making an impact close to home.

"We're creating a larger footprint for economic development in the region," Hall says. "This is the foundation for the types of things that make it possible for companies to locate in Brookings and South Dakota. We have a great program that provides management resources for the construction industry."

"We knew we had a quality program and this prestigious ACCE accreditation is external validation."

Word of the accreditation came after the visiting team filed their official report and it was voted on by the ACCE Executive Board at the annual meeting in Providence, Rhode Island, in July.

"When the visiting team left campus, we knew in our hearts, in Olympic terms, we had nailed the landing," Hall says. "But we had to wait to see it in black and white."

Cindy Rickeman

JEC brings Gibson, Boisjoly to campus

Students and the public were privileged to hear two top-profile speakers—former astronaut Dr. Ed Gibson talking about the value of leadership and aerospace engineer Roger Boisjoly addressing professional ethics—during their visits to campus this fall sponsored by the Joint Engineering Council.

Gibson

Gibson spoke about his experience in space and with those whose leadership qualities have made the space program successful.

In 1974, as a science-pilot on Skylab III, Gibson spent eighty-four days in space, which was the most time spent in space, an American record he shared with another astronaut for twenty-one years. On the mission, Gibson worked outside America's first space station for more than fifteen hours during three different spacewalks.

During his fourteen-year career with NASA, Gibson also served on the support crew of the Apollo 12 mission and as the ground communicator with the flight crew while they explored the moon. Gibson has also earned Air Force wings and logged more than 2,200 hours in high-performance aircraft and 100 hours in helicopters.

Boisjoly

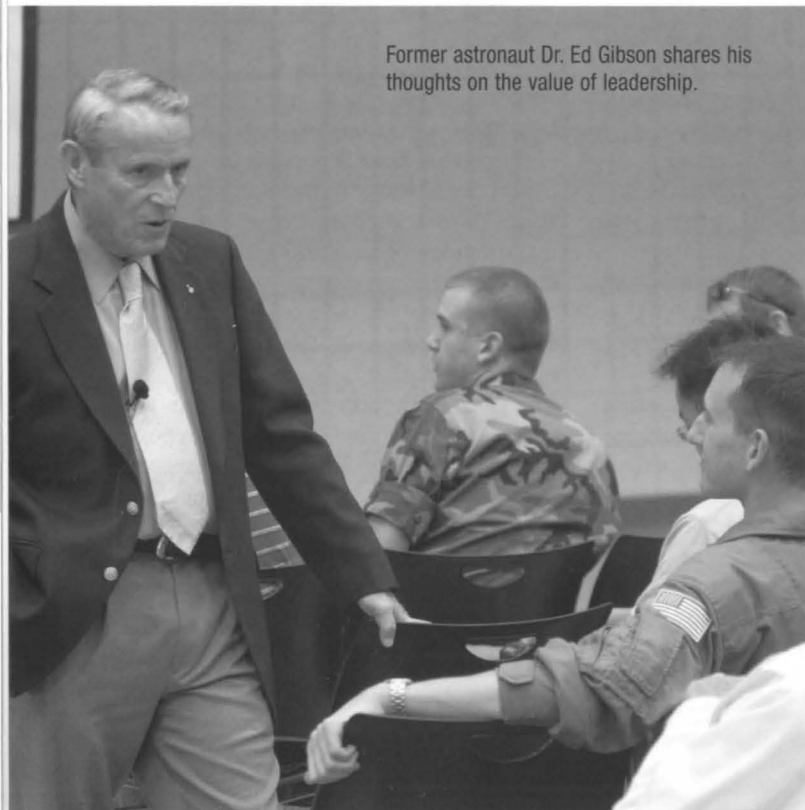
Standing up against one's superiors for what is morally right is never easy, nor is exposing a company's mistakes to the public. But that didn't stop Boisjoly, a Morton-Thiokol aerospace engineer who worked with the space shuttle Challenger program.

Boisjoly had more than twenty-five years' worth of experience in the aerospace industry in 1985 when he became involved in an improvement effort on the O-rings connecting segments of the solid rocket booster, which was used to take the space shuttle into orbit. The night before the launch, Boisjoly and several other engineers spoke with their company, Morton Thiokol, and NASA and recommended postponing the launch over O-ring safety concerns. The engineers were overruled and the launch went ahead as scheduled, with disastrous results. Seventy-three seconds after lift-off, the Challenger exploded, killing all seven of its flight crew.

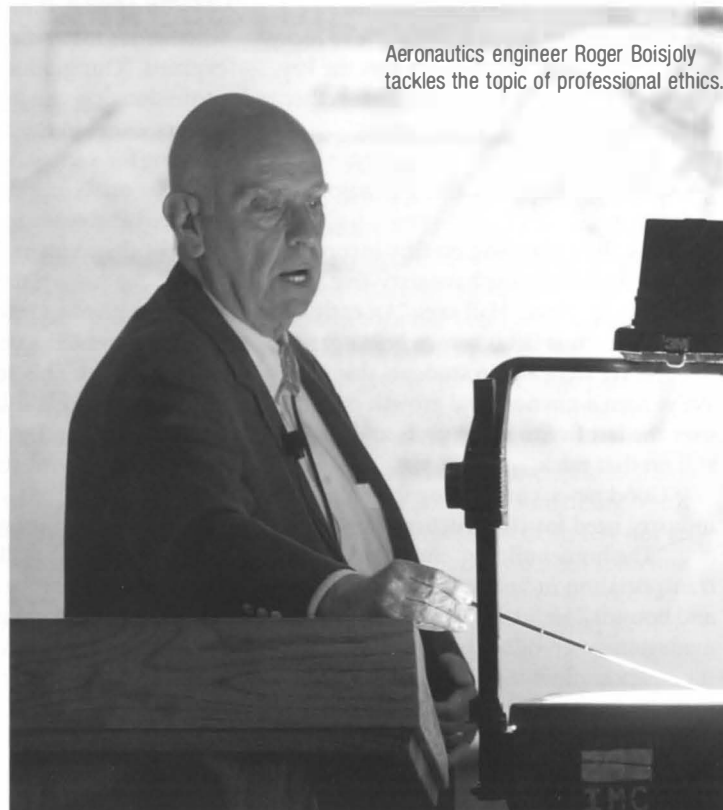
For his honesty and integrity leading up to and directly following the shuttle disaster, Boisjoly was awarded the Prize for Scientific Freedom and Responsibility by the American Association for the Advancement of Science. He currently works as a professional forensic engineering consultant and noted speaker on professional ethics.

Andrea Kieckhefer

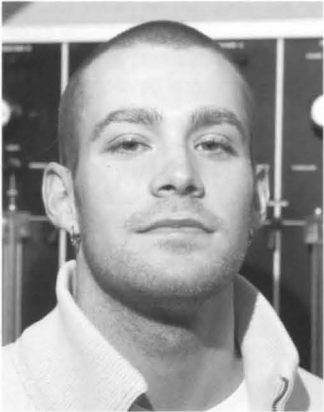
Former astronaut Dr. Ed Gibson shares his thoughts on the value of leadership.



Aeronautics engineer Roger Boisjoly tackles the topic of professional ethics.



1



Jared Haskins

2



Jason Zemlicka

3



Joe Chilson

4

Geotek Interns



Brett Filut

Haskins + 3 = 4 Geotek Interns

Jared Haskins thought he was taking an internship to pay for summer expenses. He didn't realize he would be opening the door for fellow civil engineering students interested in geotechnical engineering.

The second-semester civil engineering graduate student first worked for Geotek Engineering and Testing Services as an undergraduate during the summer of 2003. The following summer, Jason Zemlicka jumped on board. Bringing the total of SDSU Geotek interns to four are Joe Chilson and Brett Filut, who started this summer.

"I wanted to stay around the area and there aren't that many geotechnical engineering firms around here," says Chilson, who is also in his second semester of graduate work.

Due to a jump in construction projects during the summer months, Sioux Falls-based Geotek Engineering and Testing Services needs a bigger staff May through August. That's a perfect opportunity for SDSU civil engineering students to gain some real-world experience.

"We see quite a rise in demand for our services for the summer season, so it's a good fit for us," says Jeff Christensen of Geotek. This past summer the four students gained on-the-job training in Geotek's lab

and on commercial and residential construction sites.

"I liked the work. I liked the people," says Haskins, noting that Geotek gave the students training and then sent them out on assignment. "You learn a lot more by going out by yourself. You don't rely on someone else."

Chilson agrees. "They let me go out by myself. It definitely gave me some independence."

Their job description included various soil and concrete tests.

"The purpose of the testing is part of a quality control program for the project," says Christensen. The projects ranged from street construction to new residential housing builds. Each intern's responsibility was to ensure the quality of the building materials and construction site.

"I got to travel quite a bit from job site to job site. The days always seemed to go by fast because we were always busy," says Zemlicka, who started graduate school this spring.

The students completed jobs typical of a technician. Chilson says, "The experience will give me the background as I design."

In addition to learning testing methods and soil properties, the interns cite

professional communication among the many skills they brushed up on.

Haskins says he built "a lot of communication skills" from talking with contractors, or the customers, and other Geotek employees.

Chilson says that it was good experience talking with contractors. "It was my first real experience dealing with them one on one."

Although internships are not required by the Civil Engineering Department Zemlicka says they're "encouraged." He sees the summer job as a resume builder.

"It's something you can put down where you've had experience in the field," he says.

Geotek has had an internship program for several years, but the recent move to include SDSU engineers has been a benefit, says Christensen.

"It's nice to get the engineering students because they already have the basics," he says. "I would rank them as very well prepared."

"We had a very busy summer," says Christensen, "and they were a huge part of what I would call a successful season."

Miranda Reiman

Whitney Karpen

Career goals are high and wide



Whitney doesn't have one ideal career, she has three. "It was always a toss up between making fake legs, making roller coasters, or making rockets," she says. "I love roller coasters. I like things that go fast."

This summer, though, the sophomore mechanical engineering major gained her first experience working with biomedical engineering at Rochester's Mayo Clinic.

Typically, students finish their sophomore year of college before taking part in an internship program at the clinic. Thanks to a family friend connection, however, Karpen was offered the chance to work at Mayo's Biomechanics and Motion Analysis Laboratory. "It was lucky," says Karpen, whose interest in a master's degree in biomedical engineering led her to visit the lab last spring.

Karpen and another intern worked on an osteoarthritis study of more than 300 patients to determine if exercise affected the progress of the disease. Karpen worked with MRI data to create a computer program to determine the amount of cartilage between knee bones. The amount of joint space width corresponded with the severity of the arthritis, and the results were then used to give patients a rating on a scale.

"It was such a good experience to be there because everyone is so smart," says Karpen, who wrote a computer program allowing researchers to rotate images. "It was nice to have a summer job where I had to use my brain."

An engineer from the start

Karpen's interest in mechanics dates back to her childhood. "I got in so much trouble

when I was little because I would always tear things apart," she says. "I don't know if we had a working radio in the house when I left. My mom always told me that engineering might be a good way to go."

Science served as a big part of Karpen's high school years as well. The Jefferson native won second place at SDSU's Eastern South Dakota Science and Engineering Fair for three years. Her projects included solving a Rubik's cube, building PVC pipe musical instruments, and determining the strength of concrete bridges.

Her science fair participation and scholarship winnings, along with taking part in SDSU's Youth Engineering Adventure, helped convince the Briggs Scholar to continue her education in Brookings.

"That really cemented my decision," says Karpen, who visited Iowa State, the

Far Left photo: Karpen does “the robot” as she wears equipment used to analyze motion in the lab. An infrared camera tracks motion by detecting the little balls covered in reflective tape.

Top Left: Karpen solders a circuit board. Her technical aptitude makes her unique, says Dr. Kenton Kaufman, director of the lab where Karpen interned this summer.



Bottom Left: Karpen flies in a harness used in the lab. “I’m superman,” she says.

Above: Karpen dons some medical apparel. Her interest in prosthetics as a possible career stemmed from an article in the magazine *Popular Science*. “I always really liked working with people,” she says.

University of Kansas, and the University of Nebraska-Lincoln before choosing State. She says she liked the personal atmosphere SDSU offered. “The faculty seemed very excited that I was interested in becoming an engineering student at SDSU. I wanted to receive a good education, and I definitely will here.”

Specifically, Karpen says her work at Rochester helped her become a better problem solver. Her experience has helped her in her classes as well. “It’s been cool,” she says. “It made me realize I have a lot more to learn.”

A ‘unique’ student

Just call her one of the guys.

“Most activities that I have participated in seem to be predominately male,” says Karpen, a member of the Pride of the Dakotas® drum line and winner of the band’s 2005 outstanding sophomore award.

She became the lone student in her fundamentals of machine tool applications class, and one of two females in her engineering materials class.

Karpen’s technical aptitude makes her unique, says Dr. Kenton Kaufman, director of the lab where Karpen interned this summer. He remembers working late one Friday afternoon in his office when he heard some noise coming from the hall. When he went to find the source, he discovered Karpen and her fellow intern

“It was always a toss up between making fake legs, making roller coasters, or making rockets. I love roller coasters. I like things that go fast.”

Whitney Karpen

taking apart a piece of electrical equipment that had broken. The two were so involved in their task they didn’t notice Kaufman enter the room, he says.

“I think that unique curiosity is what makes her special,” he says. “Another unique thing about Whitney is that she is a female engineering [student].”

Nine percent of American engineers are women, according to the National Academy of Engineering. However, biomedical engineering boasts a higher number of women engineers than other engineering fields, says Kaufman. Of six biomedical engineers currently in his lab, two are female.

Jobs for biomedical engineers seem to be on the rise as well. Statistics from the U.S. Department of Labor’s 2006-2007 *Occupational Outlook Handbook* predict a growth of 27 percent or more in biomedical engineering employment through 2014. Data predicts all engineering employment growing at a rate of 9 to 17 percent during that time.

“I think we all do what we do because we like to help people,” says Kaufman of biomedical engineers. “Rather than building a bridge, you build something that can help a person on a more individualized basis, like a knee brace or an artificial leg. That motivates all of us.”

People skills are an important part of biomedical engineering, Kaufman says, adding that Karpen excels in this area as well.

“I always really liked working with people,” says Karpen, whose interest in prosthetics stemmed from reading about the subject in the magazine *Popular Science*. She got a healthy dose of medical knowledge at her internship as well. “It was a lot of touch-and-go, learn on the spot.”

Proud of her roots

Karpen says she plans to return to Mayo next summer. “I really like Rochester a lot. Rochester made me really fall in love with the Minnesota area.”

Karpen lived with a student from Michigan Tech. Other interns lived nearby in the same apartment complex as well. “It was like living in the dorm,” she says. In addition to doing various activities, like going to Valleyfair, with the other interns, Karpen enjoyed telling fellow students about life in South Dakota. “It was a really good experience because a lot of those students were from Purdue, Duke, and Yale. They would tell me about their schools, and that would be my cue to say ‘I’m from SDSU. We have a farm at our school.’”

While prosthetics remains a key interest for Karpen, she doesn’t want to limit her career options. Whether her career takes her to the top of a roller coaster or to the depths of a research lab, she knows one thing for certain. “Definitely I’m gonna stay in the Midwest.”

Denise Watt

Life after college

Student trips help shape career goals

Whether it's the manufacture of tractors, windows, sugar beet harvesters or wind turbines, students glean valuable career information during the inspection trips held each year.

Twenty-two ag engineering and ag systems technology students learned, for example, that steel doesn't magically turn into \$200,000 pieces of farm machinery during a February trip to Iowa and Illinois.

The four-day inspection trip took students to the Pella Window Plant and Vermeer Manufacturing in Pella, Iowa, to KINZE Manufacturing in Williamsburg, Iowa, and to John Deere headquarters in Moline, Illinois. The SDSU chapter of the American Society of Agricultural and Biological Engineers and the Ag Systems Technology Club organized the trip.

Nick Michael, president of the ASABE, says the trip was beneficial because they saw "what engineers have to do to get a product from raw material to final design."

Advisor to the club, Dan Humburg, says that's the point of the annual trip.

"Hopefully, through questions and answers, they can see where their engineering skills are applied in practice," he says.

Department Head Van Kelley says, "While our professors can talk about modern technology in the classroom, there is no substitute for our students being able to see it first hand."

Thanks to yearly fundraising efforts by their clubs, the trip becomes inexpensive for students. The AST club usually coordinates a lawnmower tune-up for the community and the ASABE members park cars at home football games.

"The AST and ag engineering students work pretty closely together," says Michael.

Other money for the trip came from the Gordon Olson fund, monies donated by the 1947 graduate's family. This year the students each paid \$20 toward the charter bus and motel rooms and bought their own meals.



The group poses for a photo outside of the Pella Windows plant in Pella, Iowa.

"This is a very low-cost opportunity for students to see many companies with no commitments," says Humburg, noting that career exploration is an important part of the trip.

"In ag and biosystems engineering we have quite a bit of diversity in the companies we work for," he says. They run the gamut from egg and sugar beet processing facilities to implement manufacturers and irrigation project managers.

"The students try to schedule things that cover that range. That allows everybody to get exposure to an area they maybe hadn't ever considered," says Humburg.

Michael, a senior ag and biosystems engineering student, with plans of graduate school, agrees.

"It's an opportunity to see what's out there," he says, explaining that the trips get students thinking about life after college. "It puts in your mind what you have to design for."

Humburg hopes that the experiences motivate students in the classroom as well.

"Sometimes," he says, "you learn how much you don't know."

From start to finish

For Paul Bezdicek, a mandatory engineering trip is about much more than fulfilling a requirement.

"It gives you an opportunity to stay up to date with advancements in the field," says Bezdicek, referring to the annual inspection trip sponsored by the SDSU chapter of the American Society of Mechanical Engineers. The Department requires students to go on

John Deere Factory Tour

at least one inspection trip during their collegiate careers.

“Usually we go to two companies and they show us around and tell us more about what they do,” says the senior, who helped coordinate last spring’s trip to Fargo, North Dakota.

Bezdicsek, current president of the SDSU chapter of the ASME, sees many benefits to the trips.

“It opens students’ eyes to what is out there waiting when we’re done,” he says, noting that freshmen through seniors are invited to participate.

Fereidoon Delfanian, advisor to the ASME, agrees.

“It helps the students to see that what we teach is really relevant. It’s very useful, especially when you go to a company that has new technology that is being used,” he says.

Last April more than twenty-five students traveled to Amity Technology, which manufactures sugar beet harvesters, and to DMI, a company that builds wind turbine towers.

“We try to chose companies and products that are relevant to what students want to see and new advancements,” says Bezdicsek.

The purpose of the trip, says Bezdicsek, is to “get students familiar with operations and production that are currently going on in the surrounding area and to introduce them to opportunities in the field of mechanical engineering.”

Some of the students were on their way to compete in the ASME Student Design Conference in Grand Forks. “We try to go to the ASME conference every year and usually get in an inspection trip on the way,” says Bezdicsek.

Twelve students participated in the contest by designing bulk material transporters for rice. The highest placing SDSU team placed fifth out of fifteen teams.

Also each year, the student chapter of the American Society of Heating, Refrigeration and Air Conditioning Engineers plans a trip more focused toward its members’ career goals. This fall’s trip included a visit to McQuay International World Headquarters Minneapolis and a stop at their manufacturing plant for Applied Air Systems in Faribault, Minnesota.

Miranda Reiman



Above: A drive-through tour of the John Deere Combine Works in Moline is appreciated, considering there are ninety acres under one roof.



Left: Students tour the John Deere Pavilion in Moline, Illinois, as part of a four-day inspection trip.

Below: Students visit the tour room at the John Deere Combine Factory, where all of the chairs are fully functioning John Deere combine seats and consoles.





Shin

Summer stint leads to IBM job offer

Taking advantage of opportunities

While Shin says the Speed Team internship “was a lot of hard work,” she says she increased her skills. Moving software programs from a variety of other computer systems to the IBM iSeries server became her biggest challenge during the summer. Often, people will write code without leaving documentation for later translations, Shin says. Even so, the task helped her with her school assignments last fall.

Unlike her co-op, during which she mainly tested technologies, Shin’s Speed Team project exposed her to several aspects of an idea’s development.

“I liked IBM a lot, but I wasn’t sure I wanted to work there. It was almost refreshing and nice” to participate in the business side of technology, Shin says. “They treat you like an actual employee.” She says Speed Team members worked with both technology and business mentors, and were required to give presentations on their projects to IBM executives.

Presentations served as a source of competition for the more than thirty Speed Teams based at IBM facilities throughout the country. Shin says the teams competed in an American Idol-style contest to see who could give the best presentation in five minutes. Shin’s Speed Team placed in the top three.

“It was just an overall fun time,” she says. “I would highly recommend the Speed Teams to anyone who has gone through the IBM internship process.”

An appealing offer

At IBM Shin will work with graphical user interfaces, or windows that appear and guide an inexperienced person through the installation of a software product on the computer. “I know it’s frustrating at times [installing programs],” says Shin, who describes herself as a “visual” person. She counts her Midwest work ethic as an advantage as well.

Several things about the company appealed to the computer science major.

“I know IBM has a really awesome continuing education program,” she says. Another advantage? “People switch jobs [within the company] all the time. That’s what was really attractive to me. I wouldn’t be stuck working in one job forever.”

Denise Watt

This spring, college seniors will prepare résumés, write letters, and go through interviews to find jobs when they graduate. But Brookings native Jen Shin won’t have to do any of those tasks.

This summer, Shin participated in IBM’s Speed Teams internship program. About a month before the internship ended, however, she received a job offer from the company.

Shin will begin working for IBM after she graduates this May. Her first experience with the company dates back to 2004, however, when she participated in IBM’s co-op program, which allows students to work for the company for six to seven months.

Shin says her Speed Team internship proved very different from her co-op experience. “Like I expected, we hit the ground running,” she says. “It was overwhelming.”

Shin worked for twelve weeks with three teammates from Tennessee (Nashville) State University, Chicago’s Illinois Institute of Technology, and the University of Wisconsin (Madison). “My teammates are absolutely brilliant,” she says.

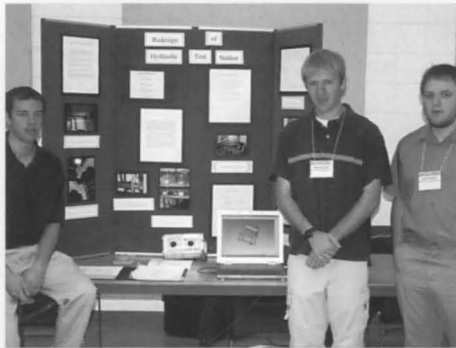
Shin and her teammates worked with mobile technologies “and also [played] with some cool gadgets. I was really excited to play with new technologies you can’t learn inside the classroom,” she says.

Senior Design Conference

Applying skills to real-world problems



Wireless Referee Pager
Dominic Walkes, left, and Joe Schenkel.



Redesign of Hydraulic Test Station
L-R: Eric Blank, Randy Giedt, and Josh Longino.



2005 SDSU Mini Baja
Danielle Friis, in vehicle, and Ben Winkels.



Flight Test Center
L-R: Jeff Carleton, Tom Karl, Josh Grabow, J.V. Kelley, and Troy Mergen.

It's a rainy day on campus. For students parking behind Harding Hall, that means trudging through inches of mud and dodging large puddles just to get to class.

That will soon change, if civil engineering students Christina Bennett, Lucas Hoover, and Kyle Smith have their way.

Their senior design project was all about applying their learned skills to a real-world problem.

"Since we use this lot, we really wanted to make the design something that would solve many of the issues for students using the current gravel lots," says Bennett, who has plans of graduate school after spring graduation.

The trio worked for two semesters to improve the layout of what are currently three separate parking lots near Harding Hall. They presented their plan at the Senior Design Conference in November.

"We all did a different part of it," says Bennett. Smith, for example, had a great deal of experience working with the AutoCAD design software. The December graduate used skills gained from summer internships.

One of thirty-two senior design projects, the parking dilemma was solved by combining the two makeshift, gravel lots with the faculty lot directly south of Harding Hall.

"By opening it up and creating one continuous lot with an asphalt surface, we eliminated having to drive through large dips and potholes in gravel," Bennett says. The project did have its challenges.

"Our main concern was the drainage of the parking lot," says Hoover, who will graduate in May.

The group used topographic maps to create a gravity-flow drainage plan. This option was more economical than adding storm sewers.

The group addressed other issues, such as utility relocation and landscaping.

"The best part is that the school might actually use our design," says Bennett. "We

felt it would be interesting to come back some years later and see what the school has decided to do with the project."

Team members agree that it would be very rewarding to see their design come to life, but they all say the experience was worth the work.

"It brought a lot of aspects of civil engineering into it," says Hoover, noting this capstone project tied together many of his engineering classes.

Bennett agrees. "The best part of the whole senior design experience was being involved in all aspects of the project," she says, "from design to materials to cost estimates."

Dean Lewis Brown notes that the skills learned reach beyond engineering. "The success of all professional engineers depends on not only their technical abilities, but also their skills in written and oral communications," he says.

During the all-day conference, students give twenty- to thirty-minute group presentations to their peers and industry leaders. The rest of the time, they are posted by their project displays to answer questions and talk about their projects.

Bennett says it has prepared her for the profession. "It gets you ready to work in a group project," she says.

Brown adds, "Successful engineers must also be effective at working in a team environment, as they often work on multiple projects and design teams. The one-year senior design project experience is as close to real-world engineering training and experience as we can provide in an academic setting."

The Senior Design Conference, in its eleventh year, featured Dan Bierschbach of Daktronics, Inc., speaking about teamwork—a fitting theme for a conference that brings together the efforts of so many.

"Our success," Brown says, "demands much from the faculty and industry project advisors to whom we are very grateful."

Miranda Reiman



Job Fair

A pivotal source for students' careers

Rick VanHatten's memories of State easily surface when it comes to the Engineering Job Fair.

That's when he can reminisce about professors like Duane Sander, Virgil Ellerbruch, Junis Storry, and Wayne Knabach. "My spark actually came from Professor Knabach," he says. "He's a very interesting guy."

He points to the College and their influence for shaping a thirty-one year career with MidAmerican Energy of Sioux City, Iowa. And the 1974 electrical engineering graduate enjoys talking about careers with the company.

"One of the interesting things is we hire from a lot of universities, but when I came to MidAmerican I didn't feel at any disadvantage with engineers from larger universities," says VanHatten, the company's distribution engineering manager. "There are a number of engineers who come out of Brookings who work for MidAmerican today. It's a good source of people."

Exploring options

The job fair, held September 29 in the spacious Volstorff Ballroom of the recently remodeled University Student Union, was once again the source for hundreds of students looking to get a heads-up on the job market.

"I think it's really important to talk to the people who you're going to work for," says Steven Bly, an agricultural and biosystems engineering senior from Garretson. "Seeing all the businesses gives you a good idea of the options and different directions you can go with your career."

While seniors attend the job fair for employment leads, Assistant Dean Rich Reid views it as especially important for freshmen. "We ask all of our freshmen to attend because they are just starting out," he says. "They are only taking general engineering classes and some aren't sure what type of engineering they want."

"The job fair serves as an important retention tool because freshmen can see where they are going to be in four years. They can see the distinction between companies and the different engineering disciplines."

A recruiting bonanza

Randy Peterson, engineering manager at Caterpillar of Peoria, Illinois, sees the job fair as the ultimate recruiting venue.

"Getting our name out is very important to us," says the 1986 agricultural engineering graduate. "It gives us the ability to talk to some of the younger class students, because then, as they get older

and get through their classes, they are more aware of what's available for their jobs."

That's what Gerad Johnson is hoping for. The twenty-one year old freshman from Fort Pierre is testing the waters after spending the last two years in Antarctica working for the Raytheon National Science Foundation as a heavy equipment operator.

"You have to get out there and sell yourself," says the construction management major. "I want to get some job leads and get my name out there. I went to work right after high school, so I'm hoping coming back to college and this job fair will give me the boost that I need."

Paul Bezdicek, a senior from Arden Hills, Minnesota, helped organize the 2004 job fair as president of the Joint Engineering Council. This year, as president of the American Society of Mechanical Engineers, he labels the job fair as a win-win deal.

"This is extremely beneficial, not only for the companies to get in front of the students, but for students like me to get in front of the companies," he says. "It's a situation that you can say, 'You know, I've heard a lot about you,' like here's a face I can put with a name. This type of personal contact is much better than just knowing the web site."

Kyle Johnson

Alumni generosity creates resource room

Thanks to the generosity of six alumni with Bartlett & West Engineers, a room that was once an “embarrassment” is now a viable resource for students and faculty.

Six alumni who are engineers with Bartlett and West contributed the funds to create the Bartlett and West Engineering Resource Room, which was formally dedicated during a ribbon cutting ceremony October 27.

The room has a conference table and electronic capabilities for laptops and presentations. Student organizations use the room for projects and meetings, a space they’ve not had before.

“This is something we’ve never had here at SDSU, a place to go just for meetings,” says Jason Zemlicka, 2005 president of the American Society of Civil Engineers. “In the past, we tried to find an empty classroom. If the class started, we had to leave and find another classroom.”

The room was formerly a sort of catch-all for whatever. “Six months ago, it was an embarrassment,” says Dean Lewis Brown. “There was no floor covering; it was bare concrete. It was a temporary faculty room. It stored cardboard boxes. Delvin



Bartlett and West engineers who funded the new resource room are, left to right: Jerry Backes, Brian Hoellein, Cory Schoffelman, Lavene Brenden, John Ladson, and Joe Honner.

So did the alumni, who say the gesture signifies a giving back to the college that gave them their start.

“We all have an interesting tale of where we’re at and where we came from,” says Jerry Backes, a 1976 alumnus. “It’s a pleasure to give a little bit back to the University.

“SDSU has a slogan, *You Can Go Anywhere from Here*®. A lot of us attest to that. You can dedicate yourself to move forward. The University gave us that chance. Now we’re giving back.”

Backes, division director for Bartlett and West, specializes in rural water systems.

The other five alumni from Bartlett and West are:

- Senior project manager Lavene Brenden, who earned his bachelor’s degree in 1970 and his master’s in 1971 and specializes in waste water and water systems.
- Location manager Brian Hoellein, who earned his bachelor’s degree in 1985 and his master’s in 1989 and specializes in water treatment and distribution.

- Engineering manager Joe Honner, who earned his bachelor’s degree in 1991 and his master’s in 1996 and specializes in water treatment plant design.

- Project manager John Ladson, a 1993 alumnus who specializes in land development.

- Project engineer Cory Schoffelman, who earned his bachelor’s degree in 1998 and his master’s in 2004 and specializes in municipal water.

Bartlett & West began as a two-person partnership fifty years ago. Today the firm has eight offices in Kansas, Iowa, Missouri, Texas, and North Dakota. The firm serves developers, businesses, architects, governments, and institutions in the areas of architectural engineering, field services, land development, map and data technology, public works, rural and regional water systems, and transportation.

Cindy Rickeman

“This is a shining example of what a partnership can do.”

Dean Lewis Brown

[DeBoer] donated tremendously of his time and talent to this. He did the details of the room itself.

“This is a shining example of what a partnership like this can do. This is a model of what we hope we can duplicate in other areas of the College. When it was first proposed, it sounded crazy. A company sponsoring one of our rooms? But as we talked about it, we thought it was a great idea.”

Engineering Advisory Board



Keith Bartels



Richard Berreth



David E. Christianson



Les Christianson



Steve Cutler

Keith Bartels

After earning his bachelor's degree in economics in 1967 and his bachelor's degree in electrical engineering in 1974, both from State, Bartels joined the staff of SSR Engineers in Billings, Montana. In 1977, he returned to his hometown area of Mitchell to become vice president of the Martin Group, Inc., from which he is now retired.

Bartels has served on numerous boards and committees, including the SDSU Alumni Association Council. He and his wife, Glynn, a 1966 SDSU clinical laboratory technology graduate, are the parents of two grown children, Kristin Mobley, a 1992 SDSU biology graduate, and Whitney Bartels, a 1997 SDSU journalism graduate.

Richard Berreth

A Menno native, Berreth retired from Haworth, an office furniture manufacturing company in Holland, Michigan, where he was vice president of manufacturing and corporate officer for six years. He also held corporate positions with Winnebago, Control Data Corporation, Collins Radio Company, and Allis Chalmers.

Berreth earned his bachelor's degree from SDSU in 1958 and his master's degree in 1962 from the University of Wisconsin, both in mechanical engineering. He also completed graduate work in operations research at the University of Iowa. He and his wife, Beth, live near White and have five children and ten grandchildren.

David E. Christianson

After a career of over thirty years in management and consulting, David

Christianson, is now providing independent strategic consulting services. The majority of his experience was developed at Burns & McDonnell Engineering Company, where his initial consulting assignments focused on economic issues for consumer-owned electric utilities.

Christianson received his BS in engineering physics from SDSU in 1972 and an MBA from the University of Missouri in 1976. He serves on industrial advisory boards to engineering schools in Kansas and Missouri as well as SDSU.

Christianson and his wife, Barb, (another '72 SDSU grad) make their home in Blue Springs, Missouri. They are parents of three grown children.

Les Christianson

Les Christianson earned his BS and MS degrees in agricultural engineering from SDSU in 1974 and 1976, respectively. He then went on to earn a PhD from the University of Missouri in 1978.

Following the completion of his doctoral degree, he joined the staff of the SDSU Agricultural Engineering Department as a professor, leaving in 1990 for the University of Illinois. He currently holds the position of director of the Bioenvironmental Engineering Research Laboratory (BERL) and Professor of Agricultural Engineering/Professor of Bioengineering.

Steve Cutler

Steve Cutler earned his bachelor of science in civil engineering in 1970 and his master of science in soils engineering in 1971, both from SDSU.

He worked as a civil engineer for the South Dakota Department of Highways from 1971 to 1974 and has been on the family farm at Claremont since 1974.

Cutler was executive director of the Dakota Asphalt Pavement Association from 1999 to 2001 and has served as state executive director of the Farm Service Agency since 2001.

From 1984 to 2000, he served in the House of Representatives as assistant majority whip, speaker pro tempore, speaker of the house, assistant majority leader, and majority leader.

Doug Daniels

Doug Daniels, a 1993 electrical engineering grad, is currently program manager for SAIC's Technical Support Services Contract with the U.S. Geological Survey's Center for Earth Resources Observation and Science.

While attending SDSU, Daniels participated in Air Force ROTC and began a four-year career as an Air Force officer in Colorado Springs, working with several satellite systems as a spacecraft engineer and lead engineer for satellite command and control operations. He also assisted the Air Force's Space Warfare Center to advance the ideology and potential applications of micro-satellite technologies.

After the Air Force, Daniels joined Hughes under contract to USGS EROS. He later joined Raytheon and finally SAIC as contractors at EROS. During his eight years at EROS, he has held several leadership positions and has most notably been a staunch advocate for consistent application of project management principles within complex and highly demanding systems development and operational activities.



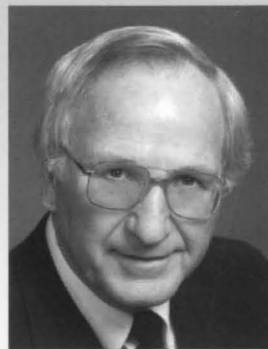
Errol EerNisse



Jerome Gaspar



Kurt Hansen



Aelred Kurtenbach



Allen Lee



Doug Daniels



Jack Finger

Daniels is a vice president with SAIC, holds an MS degree in computer engineering and is a certified Project Management Professional. Along with his family, wife Mary (also a 1993 graduate of SDSU) and children, Sydnie and Aidan, he really enjoys and appreciates the opportunity to live and work in the Sioux Falls community.

Errol EerNisse

Errol P. EerNisse earned his bachelor's degree in electrical engineering from SDSU in 1962, his master's and doctorate from Purdue University in 1963 and 1965, and his master's in industrial administration from the University of New Mexico in 1974.

He was at Sandia National Laboratories, Albuquerque, New Mexico, from 1965 to 1979, when he relocated to Salt Lake City, Utah, where he helped found Quartex, Inc., Quartztronics, Inc., and Quartzdyne, Inc.

Dr. EerNisse holds twenty-five U.S. patents with numerous foreign counterparts, and is an author or co-author of more than 100 journal and conference proceedings publications and one book.

Jack Finger

After earning his bachelor's degree in mechanical engineering from State in 1973, Jack W. Finger worked as an associate sales engineer with Westinghouse Electric

Corporation in the Los Angeles District Office. In 1978 he became the youngest sales engineer for the Energy Management Division of Sangamo-Weston, soon becoming manager of the Southern California and Hawaii district.

From there, Finger worked with Sierra Pacific Power Company in Reno, Nevada, returning to South Dakota in 1995 as general manager of Sioux Steam Cleaner Corporation, becoming

president/CEO in 1997. He and his wife, Judy, have two daughters in college in Florida.

Jerome Gaspar

A native of Bridgewater, Jerome Gaspar earned his bachelor's degree in electrical engineering from SDSU in 1967 and his master's degree in business administration from Iowa State University in 1972. He held various positions within Rockwell Collins, where he worked for thirty-seven years

Gaspar is a member of the Industrial Advisory Board of Sandia National Laboratories in Albuquerque, New Mexico, and Iowa State University. He was appointed to the National Academies for Aerospace Technologies Board of Science, Technology and Economic Policy. He is a member of the Product Development Institute and the Product Development Management Association, which awarded his company the Outstanding Corporate Innovator Award in 2002.

He and his wife, Olimpia, live in Marion, Iowa, and have a son and a daughter.

Kurt Hansen

Kurt Hansen currently leads the Commercial Nacelles Engineering organization at GE Transportation Aircraft Engines in Cincinnati, Ohio. He graduated

from SDSU in 1980 with a bachelor's degree in mechanical engineering, and later obtained a master of science degree in mechanical engineering from Rensselaer Polytechnic Institute in Troy, New York.

Hansen started his career in 1981 as an engineer at GE Energy in Schenectady, New York, transferring to GE's Aircraft Engines business in 1986, holding various leadership positions in engineering, supply chain, business development, and Six Sigma. He is a co-inventor of six U.S. patents, and is actively involved in community service in the Cincinnati area. Hansen and his wife, Dori, have five children.

Aelred Kurtenbach

Aelred J. Kurtenbach is cofounder of Daktronics, Inc., and currently serves as chairman of the board of directors. Dr. Kurtenbach earned his bachelor's, master's, and doctorate, all in electrical engineering, from the South Dakota School of Mines and Technology, the University of Nebraska, and Purdue University, respectively. He taught electrical engineering at Purdue and SDSU.

In 1968, while on the staff at SDSU, he cofounded Daktronics, Inc., which designs, manufactures, markets, and services large computer programmable displays, primarily scoreboards and large screen video systems, on a global basis. The company currently employs some 2,100 people, including 500 college students.

Over the years, Dr. Kurtenbach and Daktronics have been recognized with numerous awards for entrepreneurship and quality.

Allen Lee

A Mitchell native, Allen Lee earned his bachelor's degree in mechanical engineering from SDSU in 1978. He began his career with the 3M Company in Brookings, working as production supervisor, process engineer, industrial engineer, and project manager.

Engineering Advisory Board



James McCarville



James Mentele



Brian Miller



Kevin Moe



Susan Moe

In 1983 Lee joined Larson Manufacturing Company in Brookings, the largest manufacturer of storm doors and windows in the United States. At Larson his job experiences have included production and maintenance management, quality assurance manager, corporate design, and manufacturing engineering manager.

Lee lives in Brookings with his wife, Gail, and two children, Justin and Courtney.

James McCarville

An Ortonville, Minnesota, native, Jim McCarville worked for 3M for thirty-five years, retiring in 2001 as manager of long range planning for manufacturing information systems. He has also held positions as process and industrial engineering manager, corporate process and quality engineering consultant. Prior to 3M, he worked for P&G and Honeywell.

McCarville received his bachelor of chemical engineering and master's in business administration from the University of Minnesota and did additional graduate study at UM and SDSU in information systems. He was an adjunct professor of industrial engineering at various times at SDSU.

McCarville and his wife, Karen, have five children and live in Lindstrom, Minnesota. Two of his children, Kevin (EE '91) and Michelle (CompSci '92), are SDSU graduates, as is his father, William (EE '31).

James Mentele

A Briggs Scholar, James Mentele earned his bachelor's degree in mathematics in 1966

and his master's degree in physics in 1969, both from SDSU.

Mentele held various scientific and business IT roles with Dow Corning Corp. from 1966 to 1996. From 1996 to 2001, he served as senior information scientist, responsible for global leadership of Dow Corning's scientific and business computing architectures.

Since 2001, Mentele has served as president of Teos, Inc., computer modeling and simulations consulting; director of Global Language Translations and Consulting; scientist emeritus for Dow Corning; and senior research fellow at Central Michigan University Research Corp., where he is responsible for data and text mining technology and technical project leadership.

Brian Miller

Brian S. Miller earned his mechanical engineering degree from SDSU in 1993. He is currently the solutions branch manager for Johnson Controls, Inc. in Sioux Falls. During his twelve-year tenure with Johnson Controls, he has served in various technical and management roles. His areas of expertise include demand and supply side energy management, indoor air quality, energy efficient building systems, and customized control strategies. Overall, his efforts help Johnson Controls clients provide safe, healthy, comfortable, and efficient indoor environments.

Miller enjoys the quality of life that South Dakota offers while raising his two daughters with his wife, Brandee.

Kevin Moe

Kevin Moe earned his bachelor's degree in computer science and mathematics from State in 1988, when he joined IBM. He worked as a software engineer in workstation support, as a performance analyst in AS/400 systems performance, and in several first-line management positions.

He is currently second-line manager for WebSphere eSupport, Technology and Training and Design Source. He leads a fifty member, multi-site, international organization that delivers early education and eSupport to IBM clients, ensures ISO compliance for the SWG/RTP Lab, and provides graphical, web, and marketing collateral to Software Group brand products.

He mentors IBM employees, including college interns, and conducts recruiting programs for IBM at SDSU and other universities.

Susan Moe

Susan Moe, a 1976 civil engineering graduate, spent the first five years of her career as an engineer for consulting firms in Tennessee and Minnesota. The next several years, she was a design engineer in industry, first for Wenger Corporation in Owatonna, Minnesota, then for PowerSpan, Inc., in Rochester, Minnesota. She then returned to South Dakota, where she was a project engineer in the City of Sioux Falls Engineering Department.

In 1988, she became an instructor for National Highway Institute engineering training courses for the Federal Highway Administration in Washington, D.C., then became the pavements engineer in the



Rich Naser



Jon Rippke



Don Ufford



Kathy Walker



Jim Wilcox



Jim Morgan

FHWA Division Office in Topeka, Kansas. In 1995, she moved to the FHWA Division Office in St. Paul, Minnesota, where she is the planning and research program manager.

Jim Morgan

Jim Morgan completed the bachelor of science degree in electrical engineering from SDSU in 1969 and returned to finish the master of science degree in 1971. He joined Daktronics in 1970 and was responsible for the design of their first scoreboard in 1971. Following that success, he led the design, manufacturing, and installation of many of Daktronics' scoreboards and scoring systems.

In 1980 he was project engineer for Daktronics' first major involvement with an Olympic event, the 1980 Olympic Winter Games held in Lake Placid, New York. Morgan has been involved with Daktronics since its infancy and was named its CEO in November of 2001. Morgan and his wife, Dorothy, have two children.

Rich Naser

Rich Naser, a 1991 political science and journalism graduate, is executive director of the South Dakota Technology Business Center, a business incubator with the mission to diversify and expand the regional economy by assisting new and early-stage technology-based companies.

He has also served as the staff person for the Forward Sioux Falls Technology Program since 1999. This program initiated the development of the Technology Business Center as part of its long-term strategy for

driving technology-based economic development in the Sioux Falls region.

His wife, Rebecca McCallister-Naser, works for the Multi-Cultural Center. They have a son, Dillon, and a daughter, Anna.

Jon Rippke

Jon A. Rippke, a 1970 civil engineering graduate, is president and CEO of Bolton & Menk, Inc., a 250-person civil engineering and land surveying firm headquartered in Mankato, Minnesota. He has more than thirty-four years of experience in the planning, design, and administration of civil and municipal engineering projects.

He is currently city engineer for the City of North Mankato, a member of the board of directors of the Greater Mankato Economic Development Corporation, and president of the Civil Engineering Advisory Board for the newly accredited civil engineering program at Minnesota State University, Mankato.

Rippke and his wife, Cheryl, have been married for thirty-five years and have two daughters.

Don Ufford

Don Ufford earned his bachelor's degree in agricultural engineering from State in 1987, his master's in engineering from Purdue University in 1989, and his master's in business administration from the University of Michigan, Ann Arbor, in 1994.

He joined the Ford Motor Company in 1989 as a research engineer and has served as technology strategy, noise and vibration engineer, and as vehicle dynamics engineer. He was appointed vehicle engineering manager for the Ford Escape, based in Japan. After the launch of the Ford Escape, he served as vehicle integration manager for pickup trucks. In 2002 he was appointed chief engineer of vehicle engineering for pickup trucks and commercial vehicles.

Ufford and his wife, Rebecca, have two children.

Kathy Walker

An Aurora native, Kathy Walker earned her civil engineering degree from State in 1981 and her master's in engineering management in 1992 and a degree in professional engineering in 1999 from the University of Missouri-Rolla.

She started her career at Wisconsin Bell, where she worked for three years. Twenty-one years ago she joined U.S. Telecom, which later became Sprint. She was appointed executive vice president of network services for Sprint in 2003.

Walker serves on the dean's advisory councils at SDSU and the University of Missouri-Rolla. She is also an active board member of the Sprint Foundation.

She lives with her husband, Mark, and three Brittany spaniels in Olathe, Kansas.

Jim Wilcox

Jim Wilcox earned his bachelor's degree in electrical engineering from State in 1976 and his master's in business administration from the University of St. Thomas, St. Paul, Minnesota, in 1986.

Wilcox has worked for Northern States Power Company/Xcel Energy since 1977. He has served as electrical engineer for Control Area Operations and as supervisor for the Energy Information Division of CA Operations, both in Minneapolis, and as manager of Government and Regulatory Affairs in Sioux Falls since 1990.

A member of the Institute of Electrical and Electronic Engineers since 1977 and a registered lobbyist since 1993, Wilcox currently serves on the Western Governor's Association Energy Advisory Committee, the South Dakota Red Tape Governor's Task Force, and Governor Rounds' Energy Task Force.

COLLEGE OF ENGINEERING 2005 - 2006

NEW FACULTY & APPOINTMENTS



Dr. Kurt Bassett, associate professor of mechanical engineering. This former ME faculty member comes to us from Johnson Controls, Inc., where he served as senior project development engineer for the Great Northern Area. Received his PhD from NDSU at Fargo.



Mr. James Behnken, research associate II in Electrical Engineering & Computer Science. Working with us in the area of alternative fuels research with emphasis on the use and efficiency of ethanol and biodiesel. Received his MEd from SDSU in adult education administration.

Dr. Louis F. Blair, assistant professor of mathematics & statistics. Comes to us from Blackburn College, Carlinville, Illinois, where he served as an assistant professor of mathematics. Received his PhD from Carnegie Mellon University.



Mr. Geoffrey A. Bonvallet, instructor in physics. Has been a teaching assistant at the University of Wisconsin, Madison, where he completed his PhD in physics.



Dr. Ding-Geng Chen, associate professor of mathematics & statistics. Comes to us from the International Pacific Halibut Commission at the University of Washington in Seattle, where he was a biostatistician and quantitative scientist. Received his PhD in statistics from the University of Guelph in Canada.



Dr. Darrell DeBoer, professor emeritus of agricultural and biosystems engineering. Will be helping us out again by teaching hydrology for the Civil & Environmental Engineering Department this fall.



Mr. Colin Gaalswyk, instructor in civil & environmental engineering. A senior mechanical engineer with the SDSU Physical Plant, he will be teaching a class in civil & environmental engineering. Received his BS in ME and MS in engineering from SDSU.



Dr. Weiming Ke, assistant professor of mathematics & statistics. Served as a teaching and research assistant while completing his PhD in applied statistics at the University of Memphis in 2005.



Ms. Paula Kurtenbach, instructor in electrical engineering & computer science. Will be teaching part time in our Computer Science program. A Brookings native, she received her MS in engineering with a computer science emphasis in 2002. She has served as a distance teacher with the DIAL ILC Project in Flandreau.



Ms. Margo Law, instructor in mathematics & statistics. Comes to us from Western State College of Colorado in Gunnison, where she was a mathematics lecturer. Received her MS from UND at Grand Forks.



Dr. Sunho Lim, assistant professor of electrical engineering & computer science. Completed his PhD in computer science & engineering at the Pennsylvania State University at University Park in 2005.



Dr. Yi Liu, assistant professor of electrical engineering & computer science. Completed her PhD in computer science with emphasis in software engineering from the University of Mississippi in 2005. Teaching as a graduate student at the University of Mississippi while working on her degree.



Dr. John Massman, assistant professor of mathematics & statistics. Just completed his PhD from the University of Colorado at Boulder, where he served as a teaching assistant.



Ms. Kelly Omodt, instructor in mathematics & statistics. Completed her MS in mathematics from SDSU in 2005. While a graduate student, she taught math classes for the department.



Mr. Douglas Peters, instructor in mechanical engineering. Temporary teaching appointment in mechanical engineering became permanent. Received his BS from SDSU and his ME and MS from UND in mathematics.



Mr. Steven Rames, instructor in civil & environmental engineering. Project engineer at Banner Associates, he will teach surveying in civil & environmental engineering this fall semester. Received his BS in CE from Colorado State University and his MS in CE from SDSU in 2003.



Mr. Dan Springman, instructor in mathematics & statistics. Temporary teaching appointment in math & statistics became permanent. Has a master's degree in math from SDSU. He has also been working as a senior computer support technician for several colleges here on campus.



Ms. Anne Thompson, instructor in mathematics & statistics. Will teach in the Mathematics & Statistics Department, both on the SDSU campus and at USDSU. Has been serving as a mathematics curriculum specialist for the South Dakota Department of Education and was a classroom teacher at Sioux Falls Washington and Lincoln high schools.

Tuition Break

Tuition policy hopes to attract more non-residents to SDSU



Audrey Bloemendaal, right, is following in her father Brent's mechanical engineering footsteps. Her mother, Sherrie, left, also attended State.

A break in college tuition!! Wow, a deal all high school seniors want to hear, especially if it has the extra benefit of attending the same college as mom or dad.

SDSU is reminding students across the country that they can attend the state's largest and only Division I institution at a tuition rate similar or reduced to that of their current resident rate.

In fall 2005, the Board of Regents voted to lower non-resident tuition rates for first-time freshmen and new transfer students to 150 percent of in-state rates. The action takes effect summer 2006.

"There are probably many students who want to come to SDSU, but may not consider us because they think they will be considered out-of-state," says Assistant Dean Rich Reid. "Our new out-of-state tuition might be cheaper than their in-state rate. They might assume it will cost too much since they live in another state."

The new policy significantly lowers tuition rates for students in thirty-two states as well as those in foreign countries. Students in Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, Utah, Washington, and Wyoming already pay 150 percent of the resident tuition rate in the western undergraduate exchange program, while students from Iowa and Nebraska also pay 150 percent under the adjacent

state rate. Minnesota students currently pay about 156 percent of the resident rate through a special reciprocity agreement.

Keeping family traditions

Freshman mechanical engineering major Audrey Bloemendaal from Zionsville, Indiana, was able to follow in the footsteps of her father, Brent, who earned his mechanical engineering degree in 1975. Her mother, Sherrie, attended for a year.

Bloemendaal says SDSU was the best choice in affordability, even over the in-state tuition of Purdue University.

"I'm definitely receiving a better education here than I would have at a larger and more well-known university," she says. "I know I'm attending a great university and that I will become a great engineer, like my father."

Bloemendaal, who has grandparents living in Sioux Falls, also feels it's important to establish and encourage family members to come to SDSU.

"In a way, this creates family traditions and pride in attending this University, which will keep SDSU thriving for years," she says.

Terry Uhl, a 1978 civil engineering graduate and owner of Uhl Engineering in Prairie Village, Kansas, was more than happy when his son, Chris, a freshman English major, picked State.

"SDSU's cost is comparable to in-state schools," he says. "Chris contemplated going to the University of Kansas or Kansas State University, but decided on SDSU because the size was right and the cost was right."

Keep it going

Uhl has two other sons, Peter, an eighth-grader, and Bennett, a fifth-grader, who have received some SDSU prodding. "I've been talking to them, so maybe there will be a couple more down the road," he notes. "SDSU was right for me and gave me a good education."

That's the type of public relations college administrators like to see.

"I think there are a lot of people who have roots here who haven't considered sending their kids back to SDSU," says Reid. "They might not realize that we now have preferential reduced tuition rates for all states.

"This just increases our recruiting base and may provide us with students that we otherwise may not get," he adds. "And alumni may feel this is a nice thing and it may bring them back closer to the University."

Students currently enrolled in the public university system prior to summer 2006 will not be eligible for the new non-resident rate. According to the Regents, campuses will work with returning students on aid issues and explain how the program will be phased in.

Kyle Johnson

Jim Wilcox

Inspired by his College years, Wilcox touches South Dakota lives

It was only a couple chance encounters, but that's all it took for Jim Wilcox to be on his way in life.

As an SDSU sophomore, he had not decided the type of electrical engineering he wanted to pursue. That soon changed when Professor Wayne Knabach called him into his office and said he had a \$500 scholarship for anyone interested in being a power system engineer.

"It took me about twenty milliseconds to decide I wanted to be a power engineer,"

says Wilcox, whose destiny was influenced by another important person during college.

"I met my wife, Doniese, in the lunch line at Medary Commons," he boasts. "She is the love of my life and has pretty much molded me into what I am today."

The 1976 electrical engineering graduate is quiet and unassuming. However, a closer look reveals that Wilcox is a significant contact for the College and a key player for many in South Dakota.

For that reason he was the recipient of the 2005 Distinguished Alumnus Award for Outstanding Service to South Dakota, an honor he humbly accepted during Hobo Day weekend.

"It's a great honor," says Wilcox. "I'm flattered and a little embarrassed, because there are a number of SDSU alumni who are deserving and have done amazing things."

Maybe so, but Wilcox takes a back row seat to very few when it comes to success.

Dean Lewis Brown, left, is pictured with Doniese and Jim Wilcox on Hobo Day weekend, when Jim was presented the 2005 Distinguished Alumnus Award for Outstanding Service to South Dakota.



“Jim has devoted countless hours of time to the service of SDSU and promotion of career opportunities in engineering for the young people in South Dakota.”

Dean Lewis Brown

He has been with Xcel Energy for twenty-eight years, and since 1990 has been the company’s government and regulatory affairs manager in Sioux Falls.

Devotes countless hours

Wilcox is a registered lobbyist representing Xcel Energy before the South Dakota Legislature, and he is responsible for filings before the South Dakota Public Utilities Commission, which include rate requests, facility petitions, and complaint resolutions. He also works to improve economic development in the communities Xcel serves.

He has been Xcel Energy’s representative for the College’s Center for Power Systems Studies. It’s a partnership with the regional power industry dedicated to providing educational opportunities to engineering majors in the areas of power and energy. He is a member of the College’s economic development advisory council and the dean’s advisory council.

“Jim has devoted countless hours of time to the service of SDSU and promotion of career opportunities in engineering for the young people in South Dakota,” says Dean Lewis Brown.

Wilcox has been active in South Dakota 4-H for most of his life. He also took the lead in getting Character Counts introduced in schools across South Dakota. It’s a program designed to instill in young people the virtues of sound ethics and good behavior.

Knabach, who retired in 1995, took great satisfaction in putting his former student in the nomination spotlight.

“Jim is a very special person and I appreciated my interaction with him as a student,” he says. “I have also appreciated my interaction with him as his career has progressed. I have been so impressed with

his diversified extra activities, especially concerning the youth. Jim has a long list of accomplishments and is a most deserving distinguished alumnus.”

Influencing the youth

The Wilcoxs have an acorn scholarship in engineering and give \$1,000 per year until it is endowed. They fund a \$1,000 Jackrabbit Guarantee® Scholarship and, thanks to an Xcel Energy employee-matching program, they provide funds to several other SDSU areas as well.

While Wilcox calls it “very satisfying” to see Character Counts spread to nearly every school in South Dakota, a past 4-H project has brought countless smiles to kids across the state.

As a teenager, he attempted to construct an electric motor from a plan in a 4-H brochure. However, much to his frustration, he could never get the motor to work, which he says fueled his interest in becoming an engineer.

“That experience motivated me to find out why it wouldn’t work and was a big reason why I ended up at SDSU,” he says.

Wilcox put the incident behind him, only to have it resurface about thirty years later when he was a 4-H leader. Discovering a flaw in the original plans, he re-designed the motor and it now “flies.” He has since developed four different motor design kits and, at his own expense, gives one to any boy or girl who wants one as a project.

“It’s one of my hobbies and a very satisfying way to incite youth to become interested in one of my passions which is electricity,” he says. “I try to target twelve- to fifteen-year-old kids, because this is an age where they must commit before high school to taking math and science to even qualify for an engineering program.”

Credits parents

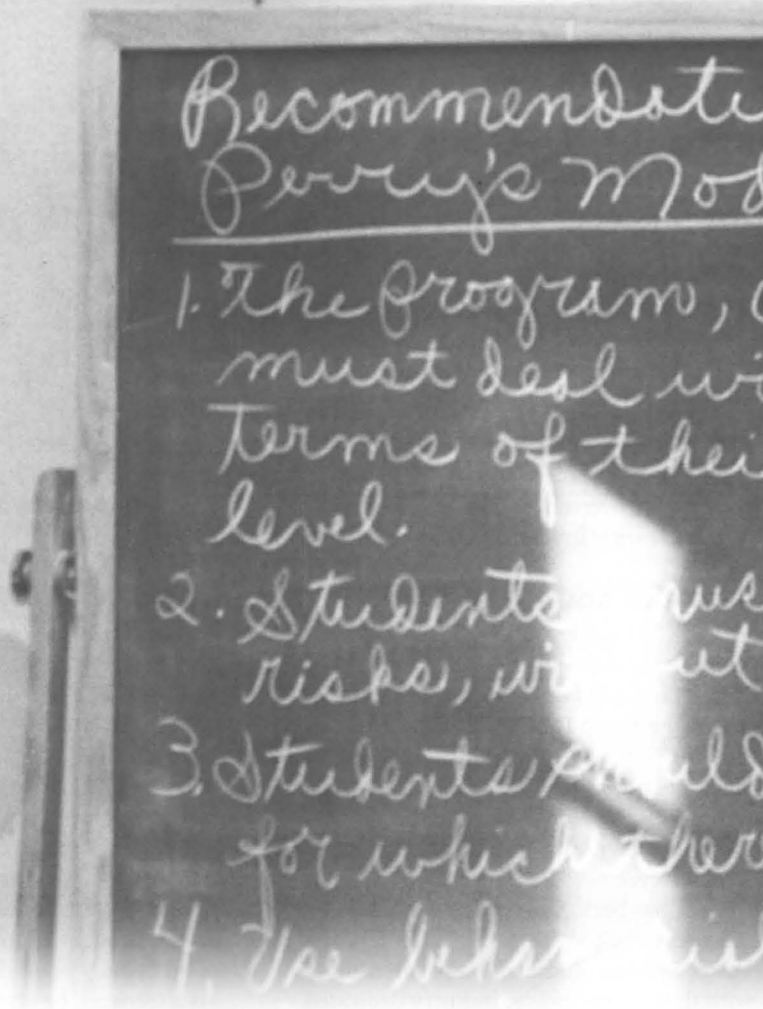
Wilcox simply likes to make a difference. He belongs to an array of professional organizations, from the Western Governor’s Energy Advisory Committee, to the Institute of Electrical and Electronic Engineers, to Governor Mike Rounds’ Energy Task Force.

He is chairman of the Sioux Falls Development Foundation Board and is a member of Rotary International. For many years he belonged to Jaycees, the Kirby Science Discovery Center Advisory Board, SDSU Alumni Council, and was chairman of the South Dakota 4-H Foundation Board of Trustees.

Wilcox traces his involvement nature to his parents. “They have been very active in their church, as 4-H leaders, and in the community,” he says. “I began my volunteerism with Jaycees as a young man to connect to people outside of a fairly solo engineering job. Since then, volunteerism has become a natural extension of my job, helping me to connect to the community that Xcel Energy serves.”

And, SDSU is a big beneficiary of that service. “SDSU has developed a family as few other universities have been able to accomplish,” cites Wilcox. “Graduates of other schools seem affiliated with their sorority or fraternity. At SDSU, the affiliation is with the University. We are all part of the SDSU family, not just some part of it.”

Kyle Johnson



Owren Harvey

Researcher gives back to support faculty education

Harvey Owren laments that his wife, Doris, knew more about his work from strangers than himself.

"I always felt bad that I could never say anything to her," he says. "It was due to the nature of my job and the times we were living in."

Owren, whose work evolved around the atomic energy program that has since been declassified, has never been secretive about his SDSU education.

"When I look back on my career, it was all made possible by what I was taught at SDSU," he says. "I will forever be grateful for that. There was very little equipment for students to use when I was in school, so I felt that the quality of the teachers is what made the University."

Owren, a 1942 electrical engineer graduate, has had the highest regard for the engineering faculty, so much so that since 1988 he has made a yearly gift of \$1,000 to the faculty development fund.

The money goes a long way in covering expenses associated with faculty attending teaching seminars, such as the National Effective Teaching Institute and the Excellence in Civil Engineering Education workshop.

"I really want to encourage people to make donations to this fund," says Owren, 86, of Fortuna, California. "Providing the financial resources so teachers can enhance their profession is critical, especially considering the impact they have on the lives of students and their education."

Better teachers, better students

Assistant Dean Rich Reid cites Owren's strong interest in the professional development of engineering faculty.

"We want faculty to go every year to these workshops," he says. "We're grateful for people like Mr. Owren for making this possible,

Scholarship honors 'Doc' Dornbush

Jim "Doc" Dornbush's former students think so highly of him, they've created a scholarship in his name.

The James N. Dornbush Environmental Engineering Scholarship Fund was recently begun through funding by Dornbush's former students, advisees, and professional acquaintances. The scholarship honors the significant impact he made on his students, the environmental engineering profession, the city of Brookings, and the state of South Dakota.

"Dr. Dornbush was the most prolific advisor of graduate students working to achieve an MS in Engineering with emphasis in environmental engineering and water resources engineering," says Professor Delvin DeBoer, director of the Water and Environmental Research Center. "He had a tremendous impact on the professional development of many students who went on to distinguish themselves in the environmental engineering field as consultants, regulatory agency personnel, and municipal employees."

From 1958 to 1990, sixty-six students finished their master's thesis or design paper under Dornbush's mentorship.

"Since many of these students have matured in their profession and indicated an interest in contributing to a scholarship to honor Jim's contributions, Rick Waples and I simply wrote a letter to them, asking if they would begin to contribute to his scholarship," says DeBoer, who earned his bachelor's degree in 1978 and his master's in 1980 from State. They have responded with contributions to the endowment fund that enable a \$500 scholarship to be awarded for the 2006-2007 academic year.

Waples, who earned his bachelor's degree in civil engineering in 1977 and his master's in 1979, is an environmental engineer with the U.S. Army Corps of Engineers Hazardous, Toxic, and Radioactive Waste Center of Expertise in Omaha, Nebraska.

Since he retired in spring 1990, Dornbush visits campus as often as he can to maintain contact with the environmental engineering program and to keep tabs on his most important legacy—his students.

"He downplays his own activities, but emphasizes his students' accomplishments," DeBoer says. "He was, and still is, extremely proud of his students' professional contributions and still exhibits that wry smile when he hears of their accomplishments as he stops by to visit, which is at least once a week when he's in town."

An Aberdeen native and Pollock High School graduate, Dornbush earned his bachelor's degree in civil engineering from State in 1949, his master's degree in public sanitary engineering and public health from the University of Minnesota in 1959, and his doctorate in environmental engineering from Washington University, St. Louis, Missouri, in 1962. He taught at SDSU from 1949 to 1990.

The purpose of the \$20,000 endowment is to provide scholarships for graduate students in the Civil and Environmental Engineering Department with emphasis in environmental engineering. Anyone interested in contributing should call the SDSU Foundation, (605) 697-7475 or go to www.sdsufoundation.org and click on "Make a Gift Online."

Cindy Rickeman

because the better job we do in the classroom, the better it is for student learning and retention.

"Adapting to different learning styles and better techniques in the classroom for lecturing, visual aids, and demonstrations make teachers more effective," adds Reid.

Associate Professor Mike Ropp calls teaching workshops "outstanding" and notes that faculty members are trained as engineers but employed as educators.

"We are using skills we were never taught to teach, skills we no longer use, and that's not a good state of affairs. Research and consulting are important to keep our engineering skills up, but we don't get as many opportunities to improve our teaching skills.

"I had a chance to attend a workshop and felt it really helped me," adds Ropp. "I learned a lot of techniques and was made aware of things I was doing that were impeding student learning. I highly recommend going to these workshops."

From GE to California

Born and raised in Centerville, Owren enrolled at State in 1937. However, needing money to continue, he took a job with General Electric in 1940 in Schenectady, New York. He transferred to General Electric in Fort Wayne, Indiana, before returning to SDSU to earn his degree.

Following graduation, Owren went back to Fort Wayne where he was the resident engineer for the Decator Plant making gun turret controls for the Flying Fortress Bomber. In 1943, he returned to Schenectady to the Vacuum Tube Engineering Department as the leader of the tube application engineering section.

In summer 1948 he resigned from General Electric and moved to Berkeley, California, where he joined the Lawrence Berkeley Laboratory. The lab was named after Canton native Ernest Lawrence, who was awarded the Nobel Prize in physics in 1939 for inventing the cyclotron.

When a new laboratory was established at Livermore, Owren transferred and became chief engineer and assistant manager of the electronics department. The lab's main effort was designing and building diagnostic equipment for nuclear tests in Nevada and the Pacific Ocean.

In 1975, he returned to the Lawrence Berkeley Laboratory to assist with the design and construction of a prototype 100,000 volt, 100-amp ion-beam line.

"Sound basic education"

Owren, who retired in 1985 only to spend another ten years doing consulting work, notes many changes in technology took place in the years following his graduation and credits his education for keeping up with the times.

"You might say I went to school for the next forty years," he says. "During the war we were working on radar and microwaves, things that we hardly heard of in school.

"What impressed me was, even though technology had changed so much, it was only because of the sound basic education at SDSU that made the difference," Owren adds. "I had the privilege of working with some of the greatest scientists in the world. I never felt intimidated and that's due to my SDSU background."

Kyle Johnson

DEAN'S CLUB

The Dean's Club is comprised of graduates and friends who gave \$250 or more to the College of Engineering from January 1 through December 31, 2005.

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Kris Bricker
Daktronics Mechanical Designer and 2001 SDSU graduate with a degree in Manufacturing Engineering



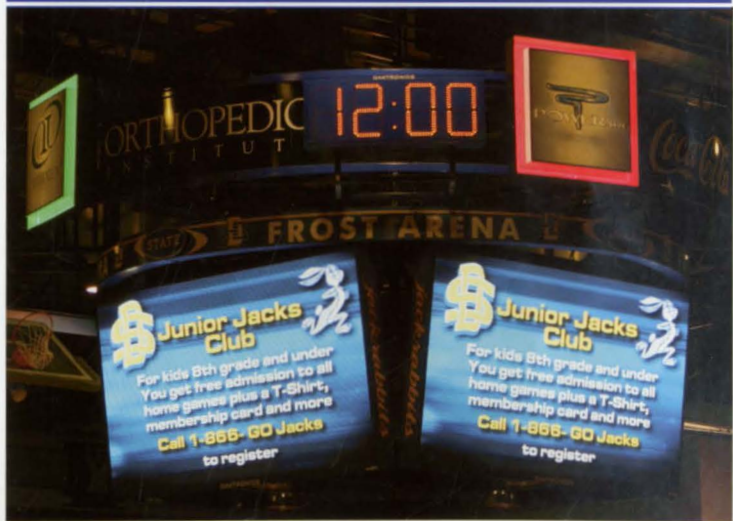
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Adam Petersen	Electronics Engineering Technology	2003
Kyle Eide	Electronics Engineering Technology	2002
Matthew Miller	Electronics Engineering Technology	1997
Steve Gokie	Electronics Engineering Technology	1997
Kris Bricker	Manufacturing Engineering Technology	2001
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Steve Gokie
Daktronics Electrical System Design Engineer and 1997 SDSU graduate with a degree in Electronics Engineering Technology



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State hosts two national conferences

COLLEGE OF ENGINEERING



The SDSU College of Engineering served as the host for two national conferences this fall: The North Central American Society of Agricultural and Biological Engineers/Canadian Society for Bioengineering Conference September 29 through October 1 and the American Society for Engineering Education North Midwest Regional Conference October 13 and 14. Pictured at left is associate professor/Extension specialist Steve Pohl showing a ventilation demonstration unit to a group of ASEE conference attendees during a tour of campus facilities. Above, ASABE/CSBE conference goers learn about the Vera Sun Energy Corporation during a tour of the plant in Aurora.