GREETINGS FROM CAMPUS

As you read this, my first semester as dean of the Jerome J. Lohr College of Engineering is approaching completion.

July 1 was my first official day as dean. It has been great to get back to Brookings and South Dakota State and to experience Hobo Day week activities and traditions again. I enjoyed meeting many of you at the dean’s meet and greet in Crothers Engineering Hall on the Friday of Hobo Day week. We’re certainly proud of our renovated spaces and grateful for the many positive comments we received.

It is a privilege to be at the helm of this storied college that was so ably guided for the past 17 years by Dr. Lew Brown. I appreciated his assistance in the transition this past summer, and I know he is here to help me in the future.

Completion of suites for the dean’s offices and the mechanical engineering department administration and faculty leaves us with only one major project area remaining in Crothers Engineering Hall—creation of an office suite for the civil and environmental engineering administration and the Water Environment Education and Research Center and offices for the faculty.

We just finished a design review of the work that has been completed during the past few years to make sure that we are showcasing the mechanical and civil engineering programs in Crothers Engineering Hall. We will meet with the provost and others in the near future to finalize conceptual plans. We hope to initiate construction in 2019.

I am excited and honored to return to finish this work that I was part of with Lew Brown and department heads when it started almost 10 years ago.

Certainly, plenty of other challenges remain—principally in the areas of undergraduate enrollment and retention as well as increasing research productivity.

Traditionally, in times of strong economy, enrollments in higher education suffer. We are seeing that again nationally and regionally. This fall, SDSU’s head count was down 3.35 percent. At the Lohr College of Engineering, the headcount is down about 5.5 percent this fall, but we anticipate our course offering hours will be down about 3 percent for the year.

COMMITTED TO SCHOLARSHIP GROWTH

While demographics and economics may be tilted against increasing enrollment, the need for trained engineers has never been greater and industry has its eye on our students. One evidence of that is the record number of entities that attended our fall Engineering Career Fair Oct. 9. There were 129 business and government agencies filling the available spaces at Club 71 in Dana J. Dykhouse Stadium.

Given this responsibility to produce the next generation of inventors, operators and consultants, it is vital that the college attracts and keeps the brightest students. One obvious strategy is to increase the availability of scholarships and graduate fellowships—that’s a directive throughout our university.

I am working with Tom Becker, the college’s representative to the SDSU Foundation, the leadership of the foundation and major alumni donors to develop a model plan for increased scholarship funding.

Once this model is developed, Tom and I will know what our undergraduate funding goals are for the next several years. We will be visiting our alumni and our constituent companies to develop the support to help us compete for engineering students in today’s market.

The Lohr College of Engineering is blessed to have a strong base of loyal and committed alumni. We intend to expand that circle whether it be through funding a Jackrabbit Guarantee, creating an endowed scholarship or giving to our general scholarship fund. We take seriously our land-grant mission of making higher education available to all deserving students regardless of their economic standing, and we hope you will join us in that mission.

The partnerships the college has with alumni and industry is the envy of our peer institutions.

If I haven’t had a chance to meet you yet, know that visitors are always welcome. If we have already crossed paths, I hope they intersect again soon.
2018 DEAN’S ADVISORY COUNCIL

Jay Bender ’82, president, Falcon Plastics
Paul Bezdicek ’06, senior sales engineer, Ingersoll Rand Industrial Technologies
Dwaine Chapel ’05, CEO/executive director of the Research Park at South Dakota State University
Jim Edwards ’82, assistant general manager of operations, East River Electric Power Cooperative
Alfred Furth ’09, vice president/chief data scientist, CAPITAL Services
Carla Gatzke ’84, vice president for human resources, Daktronics
Al Heuton, executive director/co-founder, Brookings Chamber/Brookings Economic Development Corporation
Brian Hoellein ’85/88, water treatment manager/vice president, Bartlett & West
Dale Jans ’74, vice president, Jans Corporation
Tim Jensen ’93, principal, TSP
Mike Kondratuk, director of engineering & quality, Larson Manufacturing
Heidi Konynenbelt, manager, computer systems, Otter Tail Power Company
Gary Larson ’88, president, ESI
Jerry Lohr ’58, founder, J. Lohr Vineyards and Wines
Blair Metzger ’86, president, DeWild Grant Reckert Engineering
Kevin Moe ’88, IT solution architect, Stinger Ghaffarian Technologies
Dana Nachreiner, vice president of operations, Sencore
Wanda Reder ’86, vice president, Power Systems Services Division, S&C Electric
Dan Rykhus, president/CEO, Raven Industries
Mark Shoup ’95, manufacturing engineering manager, 3M Brookings
Gene Sieve ’90, principal/regional office manager, Minneapolis-St.Paul, Burns & McDonnell
Gregg Stedronsky ’84, vice president of engineering, global safety and engineering
Brad Wermers ’89, president of Banner Associates

ABOUT THE COVER

Bruce Berdanier, a familiar face to the college, has returned as its dean five years after he left to serve as dean of the school of engineering at Fairfield (Connecticut) University.
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Bruce Berdanier packed his bags in May 2013 and said goodbye to South Dakota State with no intention of returning to his home of the past five years.

Not that he left on bad terms; quite the contrary. However, the civil engineering department head was off to the East Coast to be dean of a school of engineering at a private university. His five years at Fairfield University in Fairfield, Connecticut, were marked with reorganization, enrollment gains and external funding increases.

Nonetheless, when Lew Brown announced in July 2017 that he would be retiring as dean June 21, 2018, Berdanier took a closer look at State.
University and Board of Regents officials got a close look at Berdanier when he interviewed on campus April 18 as one of four finalists. On May 11, Berdanier was announced as the dean of Jerome J. Lohr College of Engineering. Counting co-deans Virgil Ellerbruch and Aelrud Kurtenbach, Berdanier becomes only the 11th dean of the college.

Brown’s 17 years as dean are second-most in the history of the college. Only Harold Crothers (1925-57), namesake of Crothers Engineering Hall, served longer.

Berdanier officially began serving July 1, although he was on campus some in June to gain insight from Brown, who has promised his availability while still keeping his distance. “Lew had a very calm, steady perspective. I think he had a lot of respect (among other campus academic leaders) as a senior statesman on campus,” Berdanier said.

GETTING TO KNOW HIS LEADERSHIP TEAM

He is joined by a leadership team that largely is the same one he served on while head of the civil and environmental engineering department at South Dakota State.

In his initial weeks as dean, Berdanier met those team members individually “to know what things were keeping them from being successful and the resources they needed … what they thought I needed to be doing … what I could do economically to help. They’ve been long meetings. They have a lot to talk about,” he said.

The new dean also has been touring college facilities, particularly beyond Crothers Engineering Hall, which he knew because it houses civil engineering.

During fall semester, Berdanier was working with the leadership team to craft an operational plan that sets directions for the college’s research, facilities and programs. “Of course, we have to make sure that our operational plan aligns with the university’s (new) strategic plan,” which went into effect July 1, he said.

TAKING A SECOND LOOK AT CROTHERS

Key facets during Brown’s tenure were facility upgrades and program expansion. Five major buildings were undertaken, including the expansion and renovation of Crothers.
In addition to a $7.5 million project to expand and update Crothers in 2002, the 61-year-old building was the subject of a couple recent makeovers. (See separate story Page 6-7.) “There’s about a million dollars’ worth of work left to do (including the renovation and relocation of the civil engineering office.) Let’s take a pause and look back to see if we did what we wanted to with the building.

“This building has to look like the place where parents want to be sending their children ... It’s a good time to take a design review,” Berdanier said.

CRITICAL TIME FOR ENROLLMENT GAIN

Another priority is student recruitment.

“We’ve set up the capacity for a certain number of students. Looking at the demographics, between now and 2025 is the time to develop numbers. Then there are fewer children in the student pool. People are having fewer children and the competition for students along the I-29 corridor will become really competitive,” Berdanier said.

Fall 2017 undergraduate enrollment was 1,602, which was down 50 from fall 2016. However, that loss can be tied to a drop in international students (264 to 213), which he said was seen nationally and related to changing U.S. immigration policies. Berdanier would like to see annual growth of 2 percent, which in seven years would mean 1,800 undergraduates.

“Coupling that with about 200 graduate students would be a solid performance for the college,” he said.

While that sounds modest, Berdanier noted that with Midwest demographics and international recruiting pressures, that goal is “challenging.”

Master’s degree enrollment was only down eight (268 to 260) from 2016 to 2017 and doctoral enrollment was steady at 56. As the college advances its research focus, graduate numbers should increase, Berdanier said.

Growing numbers is part of what drew Berdanier back to South Dakota State. Fairfield was becoming more selective in its admission guidelines. “I wanted to come back to an open-access school. I like that aspect of South Dakota State. We meet students where they’re at. I wanted the opportunity to do something bigger” than what would be possible at Fairfield.

Dave Graves
Engineers Without Borders has been a big part of Bruce Berdanier's life since 1996, when he did his first work with the group in Haiti.

Advancing to dean of a large college will not change that commitment, though it might change the amount of travel he can do. "I will help them anyway I can and help develop financial support for the organization. My wife and I both support the organization financially, and I want to develop new, young mentors to serve in the program," he said.

While serving as civil engineering department head at South Dakota State, he revitalized an inactive campus chapter of Engineers Without Borders.

The chapter was formed in January 2003 and hadn’t been active since December 2006. Berdanier arrived in summer 2008 and spent 1 ½ years establishing an organizational structure. The chapter became nationally recognized again in fall 2009 and that same year made a commitment to work in Carmen Pampa, Bolivia, on service projects.

Berdanier took a group of students to a university in the rural mountainous town in summer 2011 to observe the water system for the school and take water samples. Since then, SDSU has made nine trips to Unidad Academica Campesina de Carmen Pampa to construct drinking water chlorination systems for the school and town.

Berdanier made seven of those trips, including when he was at Fairfield University as that school's chapter formed a partnership with SDSU on the project as well as three trips on his own to work on project management.

He also continued to serve as a professional mentor to the SDSU Engineers Without Borders chapter. In summer 2016, three trips were made to Carmen Pampa and two of them were with joint teams. Another joint trip was made in August to do maintenance, make adjustments and explore the chapters’ next project.

“That has been a really neat experience. We've had a really great relationship with (current chapter adviser) Karen Min here and with Banner (engineers),” Berdanier said.

He pointed to Deidre Beck, who was involved in Engineers Without Borders as a collegian and then spent one year as the external relations coordinator with Unidad Academica Campesina de Carmen Pampa before joining Banner Associates in April 2018. The 2016 civil engineering graduate remains connected with the project through Banner.

“Deidre is a great example of someone who sees the bigger picture of what it means to be an engineer and understands the obligation we have to make the world a better place.

“Club activities and projects really expose students to industry and other students across the country. You develop teamwork. Employers want to know what did you do that distinguished yourself from all the other students who went through the same curriculum. Academic performance is important but a well-rounded student has more than a high GPA.

“When you can say you went to a different country and built drinking water systems or worked on the human-powered vehicle, employers know that is something students did on their own initiative,” Berdanier said.

Dave Graves
New Dean Bruce Berdanier stepped into a brand-new executive suite when he began his position July 1 but the renovations to Crothers Engineering Hall were in the works long before Berdanier submitted his application.

The first half of 2018 saw the completion of the Jerome J. Lohr College of Engineering dean’s suite and the mechanical engineering department head suite.

One remaining project is the creation of an office suite for the civil and environmental engineering department head and the Water and Environmental Research Center. Fundraising for that project is about complete and design review committee is at work. Final design and potentially construction could begin in 2019.

Each of the projects is motivated by a desire to create a better first impression on visiting prospective students and faculty.

Berdanier couldn’t be happier about the results. “We were very excited to greet the Dean’s Advisory Council members during Hobo Day and to show them the work that has been completed for mechanical engineering and the dean’s office.”

(Note: Berdanier formerly occupied the civil and environmental engineering offices. See stories Page 2 about Berdanier’s past and his plans for the college’s future.)

**CREATES PROFESSIONAL ENVIRONMENT**

Associate Dean Rich Reid, who had offices in the former dean’s suite since 2001 and for six years previous to that was in civil engineering, said, “The dean’s office has never had a conference room. We’ve had meetings in Solberg (Hall) and Daktronics Hall. Now to host a professional meeting without having to go across the street or through the snow is a nice change.

“For our visitors, to welcome them in what is now a clearly more inviting office suite and take them into a well-appointed conference room makes a positive first impression.

“If someone is going to invest time and money in this school, you want them to be able to enter into a professional environment.”

The demolition of the former dean’s office and an adjacent classroom started in the summer 2017, but the space sat idle until early 2018 when construction on the 1,818 square-foot, $425,000 project began. Move-in was May 11-14.

The new dean’s suite includes offices for the dean, the associate dean, the budget analyst, the outreach coordinator and an administrative assistant. Additionally, there is a conference room for use by the entire college, a work/mail/copy room, storage area and a comfortable reception/waiting area with space for the administrative assistant.

Reid, who has heavy recruiting responsibilities, said, “I’ve done student visits in classrooms when we lacked space. It’s wonderful to have a modern room that makes a good impression. This is modern. From the time you come in the front door, you know you’re coming to the dean’s office. From the front door you will have line of sight to the Jerome J. Lohr College of Engineering dean’s office.”

**INCREASES VISIBILITY OF OFFICE**

Les Olive, director of campus planning, said, “One of the goals of the project was to improve the visibility of the dean’s office and make it a more welcoming presence for everyone who passes by.”

To accomplish this, a textured gypsum board wall surface was installed behind the reception desk, painted an accent color and was washed with lighting to accentuate the texture, giving it a wave look.
“This, coupled with lettering declaring the Jerome J. Lohr College of Engineering, ensures visibility from anywhere near the main entrance to the building,” Olive said.

“This is to further enhance visibility to the college office suite. People walking in the main entrance of the building will be able to see directly to the College of Engineering offices. This will also give a more modern appearance to the lobby,” Olive said.

LOHR ALSO HONORED

Two new display cases flank the entrance to the main office. The east display case features student activities and highlights each department within the college. The west display case honors college namesake Jerry Lohr, a 1958 civil engineering graduate and university benefactor.

It is broken into three panels. The first shows his early years on a farm in Raymond, South Dakota, and his college days. That includes the trophy he received in 1958 for being selected the outstanding engineer. The middle panel illustrates his successful venture into California vineyards and creation of J. Lohr Wineries.

The final panel illustrates his philanthropy toward his alma mater. In addition to a number of building dedication photos, there are the sculptures he received as he has advanced through various giving societies—the Campanile, the Briggs ($1 million lifetime) and the Lohr, which was created in 2018. Lohr was one of three to have reached this $20 million mark.

MECHANICAL ENGINEERING OFFICES MOVE

Upgrades to the mechanical engineering department head’s office suite were undertaken this summer and completed in time for classes.

Olive explained that a former conference room and graduate student study area on the second floor were renovated to create the new 751 square-foot suite at a cost of $110,000.

Department Head Kurt Bassett, who has been toiling away in Room 216A since 2005, said the new quarters “are a huge improvement for welcoming visitors. In our previous office, it was pretty much standing-room only. Visitors often had to wait out in the hallway.

“The former department head offices, just across and down the hall, will be remodeled later this fall to create two faculty offices, of which there is a shortage, Reid said. This project totals 449 square feet and is estimated to cost $20,000, mostly for doorway relocations, heating and lighting upgrades and refreshing the finishes within the offices, Olive reported.

ORIGINAL BUILDING NOW 61 YEARS OLD

Crothers Engineering Hall opened in 1957, when it became the first engineering structure to be built on campus since the original Solberg Hall in 1902. Crothers was virtually unchanged until a 25,000-square-foot expansion on the southeast corner was completed in summer 2002. That included the Lohr Structures Lab.

Since then there have been improvements to the HVAC and plumbing systems in the original building and remodeling on the third floor when electrical engineering moved into Daktronics Engineering Hall in 2012.

That move created space for Engineering Extension and LTAP (Local Transportation Assistance Program) to move from Harding Hall in March 2016.

The work, which cost $159,000 and covered 3,466 square feet, included asbestos abatement, extension of fire sprinklers and HVAC upgrades.

Dave Graves
In 2016, South Dakota State University became the first institution in the nation to offer a bachelor’s degree in precision agriculture. Two short years later, State has broken ground on the Raven Precision Agriculture Center.

The facility will join agronomy, engineering and computer science disciplines together. Courses offered in the major include data analytics, GPS-GIS technology, precision crop production, precision data mapping, precision farm machinery and more. Cole Berkley, an agronomy and precision ag double major, is looking forward to seeing the facility on campus.

“I chose precision ag because of the innovation and the constant changes and the environment we are in today,” he said. “SDSU is putting on a bigger brand and is furthering the education of the students here.”

South Dakota Corn Utilization Council Endowed Dean of the College of Agriculture, Food and Environmental Sciences John Killefer said precision ag is a growing field and that students in this field are going to be instrumental in developing it.

“We have to be more efficient in the use of natural resources, we have to be able to increase productivity and we have to reduce environmental impact. Precision agriculture technologies are going to be central for us being successful in that,” he said. “We are going to have students who are going to be the leaders in this growing new field. SDSU is really going to have a huge impact to help solve some of these grand challenges we are all facing.”

This building is set to have 129,000 square feet of floor space filled with several state-of-the-art laboratories used for teaching and research. There will be a large area indoor to bring in equipment, so students can get a hands-on experience. One of the program’s current facilities, the Agriculture Engineering Hall, is tight on space, limiting their current opportunities.

Van Kelley, department head of agricultural and biosystems engineering, said that not only are the program and facility unique, but also are the ideas and collaboration that come from it.

“I would expect to see both an increase in student numbers and student collaborators with the new facility,” he said. “Pulling together a variety of disciplines to work together side by side for a collaboration; we should see a lot of innovation as a result of the new facility.”

One of those collaborators on the new facility is Raven Industries, which gave a $5 million naming gift to the project. The Sioux Falls-based company manufactures precision agriculture products. They continue to hire State grads. Lon Stroschein ’99 is the director of corporate development at Raven Industries. He said that the commitment wasn’t made to just put Raven’s name on the building.

“It was an opportunity to make an investment. If we didn’t participate, this [facility] would be built somewhere else,” he said.

With the facility being built on campus, it required support from the state legislature. It committed $22 million toward the $46 million construction costs of the facility to ensure that it was built in South Dakota.

“I could not be more excited for this project,” said Rep. Lee Quam. “This will be the most important thing we [state legislature] do in our term.”

The South Dakota Corn Utilization Council also committed $6 million to the project.

“This facility will help us [South Dakota] become the Silicon Valley of agriculture,” said Ryan Wagner, President of the South Dakota Corn Utilization Council.

Construction on the building is set to start in spring 2019 with a completion date of summer 2021.

Heidi Kronaizl
A conversation that civil engineering Professor Arden Sigl never remembered having steered a student to academic and career success. That student, 46 years later, in turn made a gesture that Sigl will never forget.

On May 8, Room 128 in Crothers Engineering Hall was dedicated as the Arden B. Sigl Office as a result of a $25,000 donation to the Jerome J. Lohr College of Engineering by 1975 civil engineering graduate Ralph Lindner. “It really was the crowning touch of my career,” said Sigl, a structural engineer who retired in 2009.

For Lindner, president of GeoTek Engineering in Sioux Falls, it was a chance “to recognize Professor Sigl for his impact on my life and career and say thank you.”

The unforgettable words that Lindner heard came in 1972. The Deuel County farm boy was a sophomore at State and had spent his freshman year struggling academically, partly as a result of his high school preparation and partly because of his approach toward school.

“The change from high school to college was a big deal for me. I had no calculus, no precalculus, no physics … that pushed me along.” The math he did take at Clear Lake High School came easily, and he was encouraged to enroll in engineering. “That first year I was really struggling,” Lindner recalled.

“Plus, I was used to milking cows seven days a week. College was a different environment” and Lindner struggled with the lack of structure.

‘TALKING TO ME FATHER-SON’

The “flat C” student had a habit of turning in work late. “Dr. Sigl gave me grace for a while, then told me I needed to kick up the effort,” Lindner said. “I think what struck me is he took an interest in me. He was talking to me father-son or like an older brother. Just some advice: You need to get yourself more organized and get your work completed on time if you want to graduate.

“I never had anybody that interested in me before. He didn’t have to do any of that. He took an interest in his students. I wasn’t the teacher’s pet. He just thought I might have success if I got myself more organized.”

While Sigl doesn’t remember that conversation, he does remember having that conversation with several students. “If I saw someone I thought was drifting, I would have that talk with him. ‘You’re capable of much better than that.’”

While it didn’t turn everyone into a dean’s list student like it did Lindner, through the years various students have come back to say thank you.

Sigl recalls that once on student move-in day, a father walked into his office. “I recognized him, but couldn’t remember his name. He had a business in Kansas City and had brought his son to school. He said, ‘When I was a student, you called me in the office and had that talk with me. Now you can have that talk with my son.’”

PASSIONATE ABOUT STUDENTS

Sigl was passionate about teaching and passionate about his students, both men agree. Sigl thinks he may have inherited that from his mother, who taught in a one-room school in the Lennox-Chancellor area.

That upbringing struck Lindner. “He’s a South Dakota-type of person.” The men became friends later in life and struck up conversations at South Dakota Engineering Society gatherings. Lindner also has served several years on the advisory board for the Department of Civil and Environmental Engineering and interacted with Sigl then.

The advisory board was given a tour of Crothers and told about plans to renovate faculty offices and the opportunity to dedicate an office in a faculty member’s name.

“That struck me as something positive to do and Dr. Sigl’s name came to mind,” said Lindner, sole owner of GeoTek, which in 2012 made a donation for a Crothers classroom renovation.

‘THE LOOK … WAS PRICELESS’

The decision to sponsor an office was even an easier one to make.

“I’m really happy that I did it. Not for getting cake and ice cream, but to see the look on Arden Sigl’s face was priceless. He worked there for 40-some years. When it comes time to retire, you ask did anybody notice me? Everybody noticed Arden, but nothing was done to put something on the wall.

“He contributed a lot to the university as a South Dakota kid. Folks like that do deserve some recognition. I’m really happy I got the impulse to do that,” Lindner said.

Dave Graves
Six mechanical engineering students in Assistant Professor Todd Letcher’s senior design class are developing materials for 3D printers that may one day be used at the International Space Station. The students will collaborate with NASA to develop and test innovative feedstock materials through a one-year, $25,000 grant, according to Letcher, who secured funding for the project.

South Dakota State University was one of 10 university teams selected to work on technologies to support NASA’s deep space exploration capabilities. This is part of the eXploration Systems and Habitation Academic Innovation Challenge, also known as X-Hab.

Currently, 3D printers at the space station use standard plastic materials, which do not have the required strength or fatigue life for aerospace applications, explained Letcher, who has been working with 3D printing since 2014. “The goal is get something approaching the strength of metal.”

The chance to work with NASA engineers drew Easton Schuster, of Sioux Falls, and Bradley Drake, of Rapid City, to the senior design project. Working with NASA engineers and learning more about 3D printing were selling points for Tyler Waege, of Watertown. Adrian Weerakkody, of Sri Lanka, said, “It’s a dream of mine to work at NASA—those engineers are legends.”

Mikala Fjerstad, of Lennox, who is also a Spanish major, said, “This senior design project is different than any other, and 3D printing is a fairly new and growing industry.” Natalie Coughlin, of St. Paul, Minnesota, has been doing undergraduate research in 3D printing for two years. She had planned to take senior design next spring, but Letcher said, “I convinced her to join the team.”

The team members meet regularly via videoconferencing with NASA engineers, who help select the materials and guide their work, with input from commercial partner, Made In Space. The company specializes in gravity-independent manufacturing.
technologies and works on Archinaut™, a NASA-funded project to combine robotics and additive manufacturing to make parts and assemble them on orbit.

The students will use the new materials to print specimens that will be tested at the Materials Evaluation and Testing Laboratory in the Department of Mechanical Engineering. The materials that show potential will then be used to print real-life objects, such as brackets, containers or wrenches.

Letcher sees this as an opportunity to further build 3D-printing capabilities through research with Made In Space and NASA. “It’s a neat program with a lot of good ideas that will help us,” he said.

In addition, Letcher will implement the NASA systems engineering approach to project management for all of the teams in his senior capstone design class in the upcoming academic year. That will help prepare students for the workforce and possibly inspire them to pursue careers in the aerospace industry.

Christie Delfanian
Fifty years ago—1968—the Beatles and the Rolling Stones captured the charts, mini skirts triumphed in fashion and electrical appliances were the rage among consumers.

In the power industry, coal was king, nuclear power was the developing new energy and cheap gasoline prices made petroleum the clean, more practical alternative to coal. The famed Northeast blackout of 1965 showed the vulnerability of America’s electrical grid and the demand for power was continuing to rise.

As more large, coal-fired power plants went online, the need for trained engineers grew as well.

It was in this environment that the Center for Power Systems Studies was founded by authorization of the South Dakota Board of Regents in July 1968. It was then, as it is now, a collaboration between industry and academia to create student interest in the power field, provide scholarships to those students and provide industry leaders a forum to share their needs.

A couple of newcomers to South Dakota State University—John Lagerstrom, dean of the College of Engineering, and Frank Fitchen, head of the electrical engineering department—recruited the original membership.

Those original members were East River Electric Power Cooperative, Iowa Public Service Co. (now MidAmerican Energy), Northern States Power (now Xcel Energy), Northwestern Public Service (now Northwestern Energy), Otter Tail Power Co. and Interstate Power Co.

Interstate Power soon left the organization after selling its South Dakota electrical property to Sioux Valley Empire Electric Cooperative.

**CORE FIVE CONTINUE TO CONTRIBUTE**

The other five charter members remain active.

Jim Edwards, a 1982 grad and a Center for Power Systems Studies scholarship recipient, has served as chief operations officer for East River Electric for 20 years. “We have a number of SDSU electrical engineering alumni. All of them took the power option at SDSU, and I believe most, if not all, received a CPSS scholarship. Most have also participated in some CPSS events since graduating.

“CPSS is a great way to network with other utility peers. CPSS has helped insure that we have highly qualified power engineers graduating in the Midwest.”

Other companies feel the same. Joseph Dold, a 2011 grad and senior area engineer with Otter Tail Power in Morris, Minnesota, said, “The relationship with SDSU and CPSS promotes interaction between industry, students and faculty. Otter Tail Power, as well as other partners in CPSS, benefit by connecting our companies with students and faculty through internships, senior design projects and placement in companies.

“The electric power industry is very dynamic and exciting. The CPSS helps foster this message.”

**CENTER GREW UNDER KNABACH**

The Center for Power Systems Studies didn’t expand from the original five members until 1986, according to history compiled in 1995 by the late electrical engineering Professor Wayne Knabach, who was the center’s coordinator from 1971 to 1997. He invited additional members to join and created an associate members category in 1990. Now, there are 11 members and 17 associate members.

When addressing about 90 faculty members, industry representatives and students at the Center for Power Systems Studies banquet, Jeff Nelson ’71 also mentioned the influence of Knabach, who was on staff from 1957 to 1995.

“He was more than a faculty member. He was your friend, your confidante. He was a person who demonstrated a clear personal interest in your welfare. The teaching lessons Wayne presented not only in the classroom but also as a mentor have
be invaluable. As the center formed and developed, Wayne was first among equals,” Nelson said.

**CPSS ROOTS: TIMING WAS RIGHT**

Knabach’s Center for Power Systems Studies history points out how the timing was right for State to establish the center in 1968.

“The SDSU electrical engineering department has possessed a line of faculty who identified with this (power) industry, beginning with Dr. Harold Crothers and Professor William Gamble. Following them were Dr. Ken Lindley, Dean and Professor Mel Manning, Dr. Junis Story, Professor Larry Whitman, yours truly and others here for short intervals.

“At the time the Center for Power Systems Studies was formed in 1968, Professor Gamble had recently retired as department head and Dean Manning had retired from the dean’s position and joined the EE department as a full-time faculty member.

“The newly appointed dean of engineering was Dr. John Lagerstrom, whose background was electric power from Iowa State University, and the newly appointed head of the electrical engineering department was Dr. Frank Fitchen, whose undergraduate study was in electric power.

“Because of the faculty strength in this power area and the need of electric utilities for electrical engineering expertise, surrounding utilities were visited to determine if support existed for the formation of the Center for Power Systems Studies.”

**SCHOLARSHIPS BENEFIT STUDENTS, FIRMS**

The 2018-19 scholarship was awarded during the Center for Power Systems Studies 50th anniversary banquet Oct. 1 at the SDSU Alumni Center. This is the first year that Grant Metzger, a senior electrical engineering major from Rock Rapids, Iowa, has received the award. He comes from a family well acquainted with the center.

His uncle, Blair Metzger ’86, is president of DGR Engineering in Rock Rapids and his cousin, Troy Metzger ‘02, is project manager at DGR. Both are former scholarship recipients and DGR is an associate member.

Blair Metzger said, “As the CPSS supports the mission of teaching power-engineering concepts to SDSU students, those students become available to hire, and we’ve been fortunate to add a relatively large number of them to our staff.” In fact, two-thirds of the 60 DGR engineers are SDSU graduates.

Grant Metzger interned at DGR in the summers of 2016 and 2017. Last summer, he interned at Burns & McDonnell in Minneapolis.

He plans to return to DGR and work in the electrical consulting field. He said after studying four years under faculty members like Reinaldo Tonkoski and applying that knowledge in professional field experiences during the past three summers, he is ready to begin his career.

“Being a Center for Power Systems Studies scholar is an honor. It has not only allowed me to focus on the curriculum, but has opened a lot of opportunities for me to meet other power engineers and get involved with promoting the power industry to fellow students,” Grant Metzger said.

Dave Graves

‘AS A STUDENT, THE CPSS PLAYED A DEFINITE ROLE IN CHOOSING MY EDUCATION TRACK AND ULTIMATE DESIRE TO BECOME A PROFESSIONAL IN THE POWER INDUSTRY. I COULD SEE A DIRECT TIE BETWEEN CLASSROOM CONCEPTS AND THEIR REAL-WORLD APPLICATION.

“THE MEMBERSHIP’S DEMONSTRATED INTEREST IN MY PERSONAL SUCCESS THROUGH FINANCIAL SUPPORT AND PERSONAL INVOLVEMENT PROVIDED A CLEAR PICTURE OF THE TALENT, CHARACTER AND DEDICATION FOUND THROUGHOUT THE INDUSTRY.”

– Jon Bormann ’98, general manager of the Mankato, Minnesota, office of Electrical Consultants Inc., past CPSS scholarship winner

“CPSS JUMP STARTED MY CAREER AS I LANDED MY FIRST JOB WORKING AT ED AND JOEL CANNON’S COMPANY ... SINCE BECOMING A MEMBER OF CPSS, WORKING AS A PART OF CPSS HAS HELPED ME BETTER STAY IN TUNE WITH THE STUDENTS AND FACULTY AND THE OUTSTANDING ACHIEVEMENTS OF OUR ALUMNI.

‘BEING A PART OF CPSS HAS HELPED PROVIDE STUDENTS WITH INDUSTRY EXPERIENCE AS WE PLAN TECHNICAL CONFERENCES. THE MOST IMPORTANT PART HAS BEEN THE RELATIONSHIPS I’VE BEEN ABLE TO GROW WITH THE FACULTY, STUDENTS AND THE POWER INDUSTRY MEMBERS OF CPSS.”

– Kevin Doe ’04, lead engineer with Ulteig Engineers, St. Paul, Minn., past CPSS scholarship winner

“CPSS SCHOLARSHIPS GIVES STUDENTS AND GRADUATES AN EARLY CONNECTION WITH THE POWER INDUSTRY AND THE VARIOUS TYPES OF COMPANIES THAT WORK IN THE POWER INDUSTRY. IT CREATES A TIE BETWEEN SDSU, ELECTRICAL ENGINEERING AND THE POWER INDUSTRY THAT STAYS WITH GRADUATES THROUGHOUT THEIR CAREERS. THIS IN TURN MAKES THE GRADUATES WANT TO GIVE BACK AND BE PART OF CPSS AGAIN IN THEIR CAREERS BY BEING CPSS BOARD MEMBERS.”

– Jim Edwards ’82, chief operations officer for East River Electric Power Cooperative. He helped plan the CPSS anniversary with Steve Hietpas and Blair Metzger
Fifty years ago this December the State of South Dakota issued a certificate of incorporation for Daktronics Inc., the brainchild of a couple SDSU engineering professors.

The company has become what the founders anticipated—a magnet for SDSU engineering students.

As Duane Sander, Daktronics co-founder said in a 50th anniversary video, “We had all these great graduates leaving the state, and we wanted to see if we could find jobs and positions for our graduates.”

Al Kurtenbach, the other co-founder said, “The primary resource was talent and the talent was right there in the classroom.”

Seth Hansen, a longtime Daktronics executive, said, “We wanted to keep talent in the state and challenge them with opportunities to stay in South Dakota.”

Students have accepted the challenge. Literally thousands of SDSU students have paid their rent thanks to a job at Daktronics, and a great share of them have made house payments out of their Daktronics check as they stayed in the community and took full-time positions in manufacturing, sales, engineering and administrative departments.

Currently, Daktronics has 2,800 employees with more than 1,500 of them in Brookings and Sioux Falls. Hundreds of them are SDSU graduates or students.

“Our goal is to hire about 50 percent of our full-time professional positions from our Student/Intern Program,” according to Leah Brink, corporate recruiter at Daktronics.

BROOKINGS’ STRONGEST ASSET: SDSU

Sander and Kurtenbach didn’t set out to make Daktronics the world’s industry leader in designing and manufacturing electronic scoreboards, programmable display systems and large-screen video displays. At the time, Sander and Kurtenbach were both in the electrical engineering department at State. Sander arrived in 1967 and Kurtenbach in 1962.

In a 2014 article in the Brookings Register, Kurtenbach said he and Sander “talked about starting a little company, get a little enterprise going. The primary driver for that was the talent that we had in our classes.”

“One of our responsibilities was to advise students. Through advising them, we came to understand that some of them would like to stay in South Dakota—if they could find work here.”

In that same article, Kurtenbach said Brookings’ strongest asset is SDSU, which “is a real magnet for talent. It brings these bright young people to town. All we really need to do is somehow engage that talent while it’s here. We’ve got about four, five, maybe six years to get them engaged in something to try to keep them here. At Daktronics, that’s been our business plan primarily.”

SERVING ON INDUSTRY ADVISORY BOARDS

Therefore, it’s not surprising that Daktronics has made such an investment in SDSU.

“SDSU serves a unique role in providing a major chunk of Daktronics’ labor force, especially in engineering positions,”
according to Lew Brown, who retired June 21 after serving 17 years as dean. “In turn, Daktronics is more engaged with the college than any other stakeholder, not only as a financial contributor but also through serving on our advisory boards.”

Shane Carlson began serving on the electrical engineering and computer science advisory board in 2017. He got in the Daktronics “student pipeline” when he enrolled at State and now works as a hardware design engineer. He started in electronic assembly and then went to customer service before moving into engineering after completing his electrical engineering degree in 2006.

“Many Daktronics managers have served in the past. The collaboration between industry and the college is a good thing and SDSU and Daktronics are so tightly bundled together with their origins and location. What is good for one is good for the other,” Carlson said. “It really opens up a line of communication as far as what industry would like to see for students coming out of the program.”

FEEDBACK GENERATES CLASSROOM CHANGE

One tweak he has seen is students learning more computer programming within the existing classes in the two departments, he said.

Another change was allowing the first semester of the senior design course to be taken online. That made it possible for students to take a nine-month qualified internship and still finish college in 4 ½ years. “Nine months is a good time to get people comfortable with your company, but it used to require a full year of extra school so many students weren’t interested. Now it only extends graduation by a semester and more students are interested,” Carlson said.

Daktronics also benefits from being able to communicate with the 16 other industries on that advisory board, he said.

“It’s interesting for Daktronics to understand the challenges that employers face and how they feel SDSU can help. We’re able to feel the pulse of others in the electronic engineering industry,” Carlson said.

Senior design projects are another connection point between Daktronics and the college. Carlson has served as an industry adviser on multiple Daktronics-sponsored senior design projects.

Often they are initiated after an electrical engineering faculty member reaches out to the company. The projects typically include a Daktronics student employee.

“We gain valuable engineering as well as an extended opportunity to get to know the students. Senior design projects in general have proven themselves many times over for both SDSU and Daktronics,” he said.

DAK EMPHASIS ON STUDENT ACADEMIC SUCCESS

While the benefits to Daktronics are tangible, so is the company’s concern for students.

“During the school year, Daktronics student employees work an average of 15 hours per week during business hours Monday through Friday around their courses,” Brink said. “We encourage less than 20 hours per week because we want students to succeed in the classroom, first and foremost. We look for solid academic performance when we hire students, and the positions can be competitive for this reason.

“We hire engineering students starting the second semester of their freshman year and not before because we want to ensure they were able to adjust to college life and earn good grades before taking on the added responsibility of work.

“It is common for engineering students’ work to evolve during their academic journey, increasing in complexity and responsibility as they take more complicated classes. Because Daktronics has more than 500 engineers employed across the organization, our student employees benefit from the ability to see all kinds of different work they could potentially do after graduation.

“They are able to explore and clarify their own interests and talents, which makes them more savvy when they eventually go into the full-time workforce.”

TANGIBLE APPRECIATION FOR GOOD GRADES

Daktronics students also benefit from a unique compensation model that incentivizes good academic performance.

Daktronics maintains a list of SDSU courses that relate to the nature of the work Daktronics has to offer and that come from programs Daktronics recruits from the most. Students complete a form each semester and attach their transcripts for verification.
For each course on the list a student has taken and passed with an A or B, the student automatically earns an additional 20 cents per hour.

This model allows students to grow their own pay throughout their academic career, since they often add new increments each semester of their employment.

“Of course, students also receive normal base pay adjustments through our performance review process. We find students appreciate our approach to pay,” Brink said.

**ENGINEERING HALL BEARS COMPANY NAME**

Certainly, Daktronics and its officials also have been key financial backers for the college as well as the university as a whole. Kurtenbach co-chaired with Dana Dykhouse and Jerry Lohr the ‘It Starts with STATE’ fundraising campaign that was launched in 2008 and raised $255.7 million in its five-year run.

Daktronics Engineering Hall, a two-phase, three-story building with classrooms, offices and research labs that houses the electrical engineering and computer science department, was built primarily with private funds. The $1 million givers were Kurtenbach, Sander, former CEO Jim Morgan and Daktronics Inc. as well as Lohr.

Kurtenbach also led fundraising for the new Duane Sander Endowed Professorship in Engineering Innovation and Entrepreneurship, an effort to foster additional South Dakota-based growth businesses.

**EFFORTS KEPT TECHNOLOGY PROGRAM ALIVE**

Kurtenbach and the company also quietly stepped to the plate after 2011 state budget cuts resulted in the curtailing of a number of SDSU programs, including the electrical engineering technology program. It is a key one for the company. More full-time Daktronics employees have an electrical engineering technology degree than any other degree.

“Over the course of six years, Daktronics provided over $250,000 to cover the shortfall in faculty salaries and lab needs,” according to Teresa Hall, head of the construction and operations management department, which houses the electrical engineering technology program.

As a result of Daktronics’ efforts, the program was saved. A small staff was retained to allow students already in the program to graduate and with the influx of support by Daktronics, five students were enrolled in the program in fall 2012.

By spring 2018, the electrical engineering technology program was up to 48 students and it has been self-supporting since 2015.

“That’s been the philosophy of Daktronics—Dr. Kurtenbach and Dr. Sander—since the beginning. Stepping up and helping students, who, in turn, have made the company stronger. SDSU and Daktronics are collaborators. What is good for one is good for the other and, in this particular case, our EET program will continue to provide great careers for students,” Hall said.

*Dave Graves*
After placing second in 2017, 12 seniors-to-be had a plan to improve that performance in 2018.

“We thought if we spent more time being detail-oriented and put in more effort to get everybody more involved, we could win,” said Alex Koepke, an agricultural and biosystems engineering major from Sioux Falls.

That philosophy paid off as the South Dakota State Quarter-Scale Tractor Team won the 2018 American Society of Agricultural and Biological Engineers International Quarter-Scale Tractor Student Design Competition May 31-June 3 in Peoria, Illinois.

Each competing quarter-scale tractor team must submit a written design report before the competition. The teams are given a 31-horsepower Briggs & Stratton engine and a set of Titan tires. Following that, the tractor is left to the students to both design and build. A panel of industry experts judge the machines on innovation, manufacturability, serviceability, safety, sound level and ergonomics.

In addition, the teams present and sell their design to a corporate management team, played by the industry experts. The machines are judged on performance in three tractor pulls, a maneuverability course and a durability course.

“There was a group of students who were on the team and had the driveline as their senior project,” said Douglas Prairie, an instructor in the Department of Agricultural and Biosystems Engineering and team adviser. “They worked on other stuff but they were the core from the engine to the wheels—that was their baby. They spent a tremendous amount of hours on that, and it was very unique with what they did. “They built a two-speed power shift transmission—it was very novel. They positioned it well, and it was very solid,” he continued. “The competition is itself about the pull, but it’s a design competition as well. The core students spent a lot of time with the drivetrain. They had a lot of physical test data they could show the judges. They could show they put their homework in and knew the tractor inside and out.”

That knowledge helped the students produce their overall score.

“We won the technical presentation portion, too,” said Tia Muller, a senior majoring in agricultural and biosystems engineering from Pipestone, Minnesota. “On the points scale, that’s a large portion of the competition. You have to present your design to industry leaders as if it was a business meeting. We presented what we designed, why we should build it and how we should market it. It’s all aspects of a company. It’s such a well-rounded competition.”

Koepke and Muller did not know all of the factors involved when they joined the team as part of a three-person freshman class.

“The leadership wasn’t as committed then. Of the four of us who went to the international competition, three of us were freshmen,” Muller said. “By comparison, we had 12 seniors on last year’s team and a couple of really good freshmen. Having that leadership really helped, and it’s carried over this year.”

Those freshmen finished second overall in the X class. That competition is where students can modify the previous year’s tractor and have it compete again. The class is specifically designed for underclassmen to get some experience before diving into the A class.

Koepke, who graduated in December, joined the team because he wanted the hands-on experience and the chance to design and build a tractor.

“I like to work in the shop, and it was a good way to meet people with the same interest,” he said. “One thing the group didn’t stress when we were younger was it’s open to anybody. When we were freshmen, they only wanted AST (agricultural systems technology) and ABE majors. As we got older, we started to invite electrical and mechanical engineering students.”

Muller said that range of students not only helped the team achieve its success but also has helped it grow closer.

“We had a lot of capabilities last year that we were able to split into groups, allowing people to work on what they were good at and what they enjoyed doing, which obviously helped the team as a whole,” she said. “The organization is very close-knit. It’s a huge commitment. We have work nights twice a week for four hours. The nice thing is you don’t have to be there all of the time but if you want to be involved, you have to commit to it.”

“I joined because I didn’t know anything about mechanical equipment, but I liked it and joined just to learn,” Muller added. “We have a freshman this year who is doing the same path.”

Matt Schmidt
It's a win for the Brookings Municipal Utilities and for environmental engineering students in the Jerome J. Lohr College of Engineering.

City employees work weekdays at the wastewater treatment plant. Engineering students operate the plant evenings, nights, weekends and holidays and perform the laboratory compliance testing for the facility’s surface-water discharge permit.

The Performance Evaluation of Water and Wastewater Treatment contract between the Brookings Municipal Utilities (BMU) and the SDSU Water and Environmental Engineering Research Center (WEERC) makes this possible. The first annual contract was signed in 1980 when the new wastewater treatment plant went online.

“Employers love graduates who have this experience,” said WEERC Director and Professor Chris Schmit, who oversees the contract. “This shared experience has also created a sense of camaraderie among our graduates.”

BMU Water and Wastewater Engineering Manager Eric Witt said, “It works pretty well. For wastewater plant employees, it’s a luxury not to have a second or third shift.” Witt was the wastewater plant supervisor for 10 years before becoming engineering manager.
“It’s surprising how many consultants I meet working on proposals and projects who are SDSU grads and have worked at the plant,” Witt added. When BMU has an opening at the wastewater plant, recruiting former student employees is a priority. SDSU alumnus Chad Bachman, who became BMU water and wastewater plant supervisor in February, worked at the plant from 1996 to 1999. He completed his bachelor’s degree in 1997 and his master’s degree in 2002.

“People across the country are envious of this unique relationship,” said Schmit, pointing out he has come across only one other similar program. He hires a mix of graduate and undergraduate students interested in environmental engineering to work at the wastewater plant. He gives priority to undergraduates who are also considering graduate studies.

Currently, five graduate students and six undergraduate students work at the plant. Graduate student Jason Neville, who is the head student operator, is in charge of training and scheduling the student workforce and is available to answer students’ questions.

In addition, a full-time operator is on call to help students, Witt explained. “We don’t expect a student to know everything a full-timer does. If there is an issue, they can contact standby personnel to troubleshoot.”

Neville coordinates with Keith Fitzgerald, the full-time day shift operator, as well as plant superintendent Larry Mutchler. Schmit works with Neville and Bachman to resolve any overarching issues with the program.

“Communication is the key,” Schmit said. “We’re going for the same goal so we nurture that relationship.”

OVERSEEING PLANT OPERATION

Experience in operating and monitoring a wastewater plant makes students more marketable. “These students are a cut above the rest because of this experience,” Schmit said.

Junior Norman Statz of St. Cloud, Minnesota, said, “I thought it would give me a chance to explore one of the special disciplines in my field—and it has done that.” He began working at the plant last summer. He pointed out how working as an operator then
EXPERIENCE AT WASTEWATER PLANT BUILDS LEADERS IN ENVIRONMENTAL ENGINEERING

SDSU environmental engineering alumni have become leaders in the field, thanks to a graduate program with a reputation for excellence and assistantships that give the students experience operating a wastewater treatment plant.

“It’s a unique situation where young engineers can gain real-world experience,” explained Aberdeen native Chad Bachman, ’97/M.S. ’02, who worked at the plant from 1996 through 1999. “It’s amazing how many students have had this opportunity.”

After five years at Bartlett and West, a consulting company in Topeka, Kansas, he returned to Brookings to work at Banner Associates in 2004. In February, he became water and wastewater plant supervisor for Brookings Municipal Utilities. “It was appealing to finish my career where I started it in college,” he said.

When BMU has an opening at the wastewater plant, recruiting former student employees is a priority, according to BMU Water and Wastewater Engineering Manager Eric Witt.

RECALLING FIRST DECADE

Dan Graber ’81/M.S. ’83, who was among the first group of students to work at the plant, said, “I got an appreciation for the biology of how a treatment plant works.” The Viborg native began working at the plant in December 1980 during his senior year and continued as a graduate assistant.

“In those early days, we struggled to get enough people to fill the hours,” recalled Graber. His experience at the plant and connections with alumni helped him secure a position with HDR Engineering in 1983 amid a tight job market. He’s been with that company ever since, working first at the HDR headquarters in Omaha for nearly five years, then in Minneapolis for 10 years and Las Vegas for five years and has been in the Sioux Falls branch of HDR Engineering since 2003.

“Being out at the plant in the middle of the night gives you an appreciation for what the operators have to do, the things that work and those that could be done better,” he said. “In a nutshell, it gives you a hands-on understanding of how things fit and how they work together that you cannot get sitting in the office.”

Mark Perry ’84/M.S. ’86, wastewater superintendent for the city of Sioux Falls, agreed. “I would not be where I am today in my career without this program. It is a huge leg up on the rest of the engineers that come out of school.”

FUELING RESEARCH

The BMU contract funds assistantships for graduate students and thereby gives those students opportunities to do research.
Perry, who was a graduate assistant at the Brookings wastewater plant for two years, also pointed out how the students learned the value of teamwork. “When you start at the plant, there are a lot of things to learn,” he said. “There was always that teaching aspect, where the older students would train the younger ones along with support from the wastewater treatment staff.”

Perry began his career at Black and Veatch in Kansas City in 1986 and returned to South Dakota in 1991 to work for the city of Sioux Falls. He became wastewater superintendent in 2011.

Perry now works with WEERC director Chris Schmit to develop projects graduate students can work on to come up with solutions for the Sioux Falls wastewater treatment facility. “These projects benefit both the students and the city of Sioux Falls,” he explained.

**MAKING CAREER CHOICE, FUELING PRIDE**

Darin Brickman, ’91/M.S. ’93, who was also a student-athlete, began work at the plant in the spring of his senior year. “I grew up in a ranching family in the Black Hills area (Belle Fourche) and knew I had to get practical hands-on experience. Once I started at the plant, I knew I wanted to go to graduate school—it was fascinating to me.”

When he completed his master’s degree, Brickman headed back west to Denver, Colorado, working for four years at a small, specialty firm before transitioning to Burns & McDonnell. During his 21 years at Burns & McDonnell, Brickman has become an officer, serving as director of municipal water and wastewater for the Rocky Mountain Regional Office in Denver before becoming national director of municipal water and wastewater in the firm’s Kansas City world headquarters in 2017. Out of 6,500 employees, there are only 66 officers.

In the last two years, Brickman and two SDSU mechanical engineering alumni—Gene Sieve ’90, and Dave Barr ’89—have become officers at Burns & McDonnell. “I may be a tad biased, but in my opinion, there’s quite a lineage of people coming out of SDSU. It seems practicality, hands-on experience and a strong work ethic are traits that lead to success. I’m proud of where I come from,” Brickman said.
Dawn Horner ‘96/M.S. ‘98 says her ability to work with others and build relationships paid off not only during her time at South Dakota State but also in her career with HR Green Inc.

Horner, a principal/senior project manager with HR Green, arrived at State as a scholarship student-athlete for the women’s basketball team. Because she was good at mathematics, then-coach Nancy Neiber had her talk to Dwayne Rollag, who led the civil and environmental engineering department, to help determine her major. “He said if you were good at math, you could do it,” Horner said from her office in Sioux Falls. “Before talking to him, I had never considered engineering. It took several years to figure out what engineering was and what I’d actually be doing.

“Some of the classes I took and the great professors I met showed me what the job would be like for civil,” she continued, noting Delvin DeBoer was a mentor. “I also met Mark Perry, an SDSU grad, who has been a great mentor, during my internship with the city of Sioux Falls’ sanitary sewer division. We did a lot of work then that I still do today.”

Her professional career started in Iowa, moved to Minnesota and back to South Dakota. Her interest in water and wastewater developed further while pursuing her master’s degree and work at the Brookings Municipal Utilities wastewater plant.

“I remember people asking, ‘did you really work at a wastewater plant?’ she said. “That hands-on experience is unbeatable and is really a key for your resume.

“I remember I didn’t enjoy hydraulics for the storm sewer system but there were classes in water system design and sewer system design—they kind of grabbed me,” Horner continued. “In grad school, we got more involved in the processes of equipment.”

With all of that experience, HR Green hired Horner in January 1998. A call on her behalf from Perry also helped.

“As an intern, I noticed that her ability to quickly understand and pick up on whatever project we were working on was going to assist her in her future job positions once out of college,” Perry ‘84/M.S. ‘86 said. “I was so impressed with her work ethic and abilities as an intern I called Jim Rasmussen ‘84/M.S ‘85, a classmate of mine, and told Jim that if he needed to hire a new graduate engineer, he needed to hire Dawn.”

After working as a staff engineer and earning her professional engineer license, she became a project manager and then group leader before being promoted to be operation manager for HR Green’s water group.

After becoming a principal, Horner was on a nominating committee that selects individuals for consideration to join HR Green’s board of directors. She was later contacted by someone asking why no one from her area was under consideration. Horner then started the submission process.

“I was the first one to step up from water,” she said. “It was an honor to be selected by the nominating committee for consideration and a bigger honor when picked.”

Horner was the first woman to be on the engineering firm’s board of directors.

“The board work is very interesting,” Horner said. “It’s tough to keep up with my workload, but it’s great to get out and meet people from other offices.”

Helping her with her workload are four other Jackrabbits—Mark Hardie ‘91/M.S. ’93, Matt Pajl ‘07/M.S. ’12, Jed Reimnitz ‘12 and Mo Phifer Brua ‘14. “We have an amazing water team to whom I can hand off projects and they can run with,” Horner said. “I can be a sounding board, if needed, but they are able to keep projects moving while I’m on other projects.”

“You could say work is similar to being on an athletic team as we don’t get to pick the other members of the team when working on a project,” Horner said. “Our office has that team atmosphere. It takes several people to complete a project.”

Matt Schmidt
Balancing the responsibilities of being a student-athlete while earning a bachelor’s degree in mechanical engineering was not easy for Mitch Vejvoda ’17, but he is already seeing those efforts pay off.

Vejvoda, who played tight end for the Jackrabbits’ football team from 2013 to ’16, now works as an engineer for Commonwealth Edison, better known as ComEd. Vejvoda, a native of Homer Glen, Illinois, received the Missouri Valley Football Conference Commissioner’s Academic Excellence Award three times and was on the conference’s academic honor roll three seasons. The five-time dean’s list recipient concluded his football career by being accepted as a member of the National Football Foundation’s Hampshire Honor Society, a distinguished award that recognizes college football players who have excelled both academically and athletically.

ComEd, the electrical utility company for the greater Chicagoland area, has expanded Vejvoda’s specialties.

“My work mainly consists of the testing and commissioning of electrical equipment—transformers, circuit breakers, protective relays, et cetera—in substations, so I am actually performing more electrical engineering work than mechanical,” Vejvoda said.

“On the job and in life, you may not always have the answer right in front of you. Sometimes you have to use resources and connections to your advantage. As I would go to my teachers and classmates while in school, I seek advice and knowledge from my co-workers on the job,” he continued. “I did take two electrical engineering classes at SDSU, and those set a baseline for me starting a career at ComEd. Overall though, I believe obtaining an engineering degree in general opens so many career opportunities because it proves you are a problem solver who can handle a challenge.”

Vejvoda, who thought of pursuing a business degree before choosing engineering, is interested in learning the business side of an engineering firm. While that thought is part of his future plans, he began his preparations by recently passing the Principles and Practice of Engineering Examination.

“I took the PE Exam because it will help further my career in the long run and open doors to new opportunities. The engineering classes offered at SDSU coincided with the topics covered on the exam,” he said. “Also, as part of our senior design course, taking and passing the Fundamentals of Engineering Exam factored into our final grade. Completing the FE Exam while at SDSU put me a step ahead of the game and brought me that much closer to becoming a professional engineer.”

“Being able to take the PE Exam right after graduating was very advantageous because the engineering knowledge I learned from all of the great teachers at SDSU was still fresh in my head,” Vejvoda continued.

One of those faculty members was Fereidoon Delfanian ’77/M.S. ’80, who recently retired.

“Dr. Delfanian was a huge influence and contributor to my success on the PE Exam as well as preparing me for my first engineering job out of college,” Vejvoda said. “I really enjoyed Dr. Delfanian’s Design of Machine Elements class. The class inspired me to choose the discipline of Machine Design and Materials for the PE Exam. I kept the course material from his class and used it to study for the PE. Dr. Delfanian, as well as the rest of the mechanical engineering department, laid the foundation for me to succeed, and I greatly appreciate that.”

Meanwhile, Delfanian appreciated Vejvoda’s approach to his studies.

“I was impressed with Mitch’s dedication to learning, and he made the effort to do well, especially with his busy schedule,” Delfanian said.

“Balancing engineering and football was a difficult task, but I would not have wanted to do it any other way,” he said. “Bottom line, SDSU set me up for success in life.”

Matt Schmidt
STUDENT-ATHLETES

Adam Anderson, football, construction management
Alexander Auch, track and field/CC, mechanical engineering
Brett Barnett, baseball, electrical engineering
Peter Bates, track and field, mechanical engineering
William Bierschbach, swimming and diving, mechanical engineering
Jessica Boesch, equestrian, mechanical engineering
Matthew Borowicz, football, mechanical engineering
Caleb Bray, track and field, mechanical engineering
Trever Brenner, Swimming and diving, computer science
Thomas Breuckman, track and field/CC, mechanical engineering
Levi Brown, football, computer science
Parker Brown, swimming and diving, civil engineering
Kari Brucker, volleyball, mathematics
Daniel Burkhalter, track and field, mathematics
Maria Currie, swimming and diving, mathematics
Tijah Davis, football, civil engineering
Matthew Dentlinger, men's basketball, general engineering
Bailey Dergan, track and field/CC, mechanical engineering
Markus Egger, swimming and diving, agricultural and biosystems engineering
Anna Fasen, track and field/CC, mechanical engineering
Evan Fick, track and field/CC, mechanical engineering
J’Bore Gibbs, football, construction management
Joshua Goehring, track and field, mechanical engineering
Charles Greene, swimming and diving, mechanical engineering
Evan Greeneway, football, civil engineering
Jonathan Gruetzmacher, football, mechanical engineering
Mykin Gunning, swimming and diving, civil engineering
Derek Hackman, baseball, computer science
Kallan Hart, football, civil engineering
Maxwel Howard, football, mathematics
Spencer Huber, wrestling, mechanical engineering
Lucas Ira, baseball, electrical engineering
Samuel Ivanecaky, track and field/CC, data science, computer science, mathematics
Blake Iverson, track and field, mechanical engineering
Maclaine Johnson, swimming and diving, computer science
Mary Krause, track and field/CC, computer science
Krockett Krolkowski, football, construction management
Ryan Krueger, men's basketball, construction management
Dalton Lakmann, wrestling, civil engineering
Marquise Lewis, football, electronics engineering technology
Kinser Madison, football, electrical engineering
Mason McCormick, football, construction management
Ryan McDonald, baseball, mechanical engineering
Jared Miller, swimming and diving, mechanical engineering
Madison Mingo, track and field, mechanical engineering
Joseph Minor-Williams, track and field/CC, computer science
Michael Morgan, football, mechanical engineering
Blair Mulholland, football, operations management
Ray Munsterman, track and field/CC, mechanical engineering
Amelia Nelson, equestrian, mechanical engineering
Mitchell Oehme, baseball, civil engineering
Benjamin Olson, track and field/CC, mechanical engineering
Sydney Palmer, women's basketball, mathematics
Gabriel Peters, track and field/CC, mechanical engineering
Austin Pham, swimming and diving, mechanical engineering
Reid Pierzinski, track and field, mathematics
Mitchell Rahle, swimming and diving, mechanical engineering
Abbigail Rouse, swimming and diving, general engineering
Cade Schoenauer, swimming and diving, civil engineering
Zachary Schroeder, track and field, mathematics
Marisa Schulz, soccer, mathematics
Tylen Small, football, electrical engineering
Sydney Stapleton, women's basketball, mathematics
Austin Suhr, baseball, mechanical engineering
Lauren Van Dyke, track and field/CC, general engineering
Ryan Van Marel, football, mechanical engineering
Trajan Walhof, football, mechanical engineering
Nicholas Wessels, track and field/CC, computer science
Seven Wilson, football, construction management
Blake Wolters, wrestling, agricultural and biosystems engineering
Samuel Zenner, track and field, operations management
Andrew Zimmerman, baseball, mechanical engineering

NFL UPDATE

Several Jerome J. Lohr College of Engineering graduates had the opportunity to try their hand at National Football League careers.

December 2017 operations management graduate Dallas Goedert is a rookie tight end for the Philadelphia Eagles. The Eagles' second-round draft choice, he started the regular season in the No. 2 tight end spot on the Eagles’ roster.

Entering his third NFL season is Bryan Witzmann, a December 2013 civil engineering graduate. After starting for the Kansas City Chiefs in 2017, the team released him Sept. 3. He was picked up by the Minnesota Vikings and later then signed with the Chicago Bears.

Jacob Ohnesorge, a mechanical engineering graduate, had been invited to training camps held by Seattle and Atlanta but did not sign. He later received a three-year contract offer from the Dallas Cowboys, but was cut Sept. 1.
Two students and a professional mentor from the SDSU chapter of Engineers Without Borders joined forces with three students and an adviser from Fairfield (Connecticut) University for a trip to Carmen Pampa, Bolivia, in August.

Students Peder Solberg, mechanical engineering, and Lorenzo Romero, civil engineering, were accompanied by Deidre Beck of Banner Associates, Brookings. She is a 2016 civil grad who spent 2016-17 working with Unidad Academica Campesina de Carmen Pampa.

The group spent five days in Carmen Pampa performing a follow-up technical and operations and maintenance assessment on the water treatment infrastructure installed in the area during the last seven years.

In 2012, the SDSU-EWB group installed the first of two gravity chlorination systems serving a portion of the local college (Unidad Academica Campesina de Carmen Pampa). In 2013 the group started a partnership with the EWB chapter at Fairfield University. The two university groups installed the second chlorination system serving the remainder of the college and the surrounding community including a boarding high school in 2015.

In summer 2016, construction was started on two slow sand filtration systems to provide further treatment to the water. The sand filter project was supported by a grant from Rotary International. Sand filters have been mostly operational since early 2017.

During the August visit to Bolivia, the EWB group met with key stakeholders in the project, including the director of the college, responsible maintenance personnel and the community water board. In addition to conducting important educational presentations and monitoring training, they identified several technical issues limiting the functionality of the filters.
Peder Solberg calls it drinking out of a fire hydrant. Fellow SDSU participants in the selective Summer Undergraduate Research Fellowship at the Mayo Clinic Graduate School of Biomedical Sciences had similar thoughts about their 10-week experience. But Solberg, a senior mechanical engineering major, Amanda Muller, a senior electrical engineering major, and Ella Lee, a junior microbiology and biotechnology major, all realized it was a time that may change the course of their lives.

The three Jackrabbits were among the 144 undergraduates selected. Less than 11 percent of the 1,318 applicants were accepted for the May 29 through Aug. 3 program.

Lew Brown, recently retired dean of the Jerome J. Lohr College of Engineering, calls it “unbelievable” that SDSU would have three selections. State has only had 16 selections since 1993. The high mark was four in 2012. In both 2015 and 2017 there was one.

Muller was selected after missing the cut in 2017. When the Windom, Minnesota, native was selected for 2018, “I called my parents and my grandmother because I was so excited. I knew how competitive it was. There are not very many internship opportunities available in biomedical engineering in Minnesota, so I thought it would be a great way to gain experience in the biomedical engineering field while still staying close to my family.”

All three selections are from Minnesota. Solberg is of White Bear Lake and Lee is of Kenyon, close enough to commute to Mayo’s Rochester campus.

‘LIVING UP TO THE HYPE’

While Lee had a 40-mile drive into the clinic, Solberg and Muller stayed in apartments that they rented using their $6,000 Mayo stipend. Muller said, “My apartment is a half-mile from campus. I bike to work. I’m the only summer SURF student in my building at Mayo. So it’s nice to get to know other SURF students at the apartment complex.”

She added that the SURF summer was “living up to the hype. All the resources available and learning about (Mayo’s) graduate school has been fantastic,” Muller said.

“This has been my first experience I’ve had in engineering outside of SDSU. Last summer, I spent time in a research program at SDSU when I applied to Mayo last year and wasn’t accepted. I ended up doing a wireless networking research project with (electrical engineering) faculty members Robert Fourney and Tim Hansen.

“They are developing an energy management system to control all the electronics in a building to optimize electrical efficiency,” Muller said.

STUDYING MRI IMAGES

Her work at Mayo is under Stephen Riederer, one of the top researchers in the field of magnetic resonance imaging.

“The main portion of my project is considering two different image acquisition protocols. MRIs use different combinations of radio frequency pulses, which we’re using to compare 2D images with 3D images of a standard object. We’re trying to improve images for prostate cancer so we can better distinguish between cancerous and noncancerous tissue.

“A lot of my time is spent on the computer looking at MRI data, but I have been able to scan a phantom object (a sphere) to get standard images. I’ve used two different (MRI) machines (at the research facility) as well as another one used in medical practice,” Muller said.

LEARNING TO REPROGRAM CELLS

Lee is working with Patricia Devaux, an assistant professor of biochemistry and molecular biology, which closely matches Lee’s major.

DeVaux’s work uses a virus to reprogram human fibroblasts into stem cells, which then can be differentiated into transplantable tissue for individualized cell therapy for patients with degenerative diseases like diabetes. At least that’s the long-term significance. Right now her laboratory is developing negative strand RNA virus-based vectors for reprogramming stem cells.

“My job is to insert target sequences that microRNA binds to. That binding tags the messenger RNA for degradation,” Lee said.

Her typical day involved “planning the day’s experiments and arranging experiments so all the time points fit into my day.” The experiments create a virus that is used to infect fibroblast cells,
which are common cells found in connective tissue. “Every day is kind of different, but seven of eight hours is spent in the lab. It’s nice to have a job where you can get up and do things.

“Eventually you sit at the computer looking at your data. Right now I’m working on the computer preparing my poster presentation. That’s not as much fun.”

Each student gave a poster presentation summarizing the research for the summer.

PAIRED WITH SDSU DISTINGUISHED ALUM

Solberg spent the summer working with Kenton Kaufman ’75/M.S. ’76, director of the Motion Analysis Laboratory. The professor of biomedical engineering has headed the lab since 1996 and has received more than $50 million in research grants during that time.

Much of his work has been with the Department of Defense in efforts to improve rehabilitation of wounded service members.

Solberg has worked on two projects with Kaufman, a 2007 SDSU Distinguished Alumnus. One is quantifying balance and stability during walking gait. It is in cooperation with the director of Mayo’s Vestibular and Balance Laboratory, which is studying dizziness. The degree of dizziness can be quantified by the way one walks, Kaufman said.

The other project involves a powered exoskeleton, a powered brace that will help people move, Kaufman said. He is in the beginning stages of product development.

Solberg said his typical day involved coding in MatLab, a math coding software used in data analysis, and making 3D computer models of the exoskeleton prototypes he has helped design. There also may be a meeting with distinguished faculty, such as the orthopedic surgeon who is working on the brace with Kaufman, Solberg shared.

A LONG-TERM COMMITMENT TO MAYO?

He said his time at Mayo cemented what he already was thinking about for a career field.

“In the spring semester 2018 I really had a strong inkling that the medicine side of engineering was what I wanted to do. I took an anatomy class for my biomedical engineering minor and learned about the structure and processes of the human body. The engineering lens through which I view the human body is different from what most people in the medicine field have, and I find that very exciting.

“Coming to Mayo this summer has further solidified that. I want to be involved in the design of medical devices,” Solberg said.

His next decision is what he will do after graduation in May 2019. He had thought he would get a master’s degree and work in private industry. Now he is considering graduate school at Mayo, which is typically a five-year commitment on a doctorate-only track. The fellowship is considered a courtship for both Mayo and the student.

It is working on Muller.

“I had never considered a Ph.D. I thought it was intimidating. It is less intimidating now after meeting some of the students in Ph.D. program,” she said.

KAUFMAN STAYS CONNECTED

Reflecting on his weeks at Mayo, Solberg said he valued “the opportunity to meet expert doctors and leading researchers in the medical field and learn from them. Seeing how a wide range of cutting-edge research projects are being used to solve medical problems and cure diseases was unforgettable.”

Kaufman has been at Mayo for 22 years and started working with students in the Summer Undergraduate Research Fellowship program the first year. His first participant from SDSU was Jonathan Adams in 2001. Since then, he has worked with Whitney Karpen (2005-07), John Isenberg (2006), Trevor Kjellsen (2012) and Anthony Anderson (2015).

Like other SURF selections, “They have an outstanding academic record and engagement beyond academics. We need well-rounded individuals,” Kaufman said.

Dave Graves
HOSSEIN MORADI REKABDARKOLAEE
ASSISTANT PROFESSOR

Moradi began teaching in the Department of Mathematics and Statistics this fall after being a postdoctoral fellow with the Research Network for Statistical Methods at Atmospheric and Oceanic Sciences, a nationwide collaborative.

Moradi was based at Virginia Commonwealth University, where he completed his doctorate in system modeling and analysis in 2016. He also holds a master’s in mathematics with a concentration in operations research from Virginia Commonwealth in 2014.

Moradi earned a bachelor’s degree in statistics from the University of Mazandaran in Babolsar, Iran, in 2008, and a master’s in mathematical statistics from Tarbiat Modares University, Tehran, Iran, in 2012.

Outside interests include reading papers and books as well as playing a Persian stringed instrument called the tar.

He and his wife, Zahra Naji, are still getting acquainted with Brookings, but during his time in the United States he has found, despite popular misconceptions, “the people of the United States and Iran are very similar.”

CINDY SHEA
ACCOUNTING ASSISTANT

Shea has been at SDSU since February 2013, but just joined the Department of Agricultural and Biosystems Engineering in June. Previously, she was a senior secretary in the Admissions Office processing applications.

Her background includes 12 years teaching elementary school in Casa Grande, Arizona, and Dell Rapids, working as a bookkeeper for Hefty Brand Seeds for 10 years and as an administrative assistant at Gateway in Sioux Falls for three years.

Shea holds a bachelor’s degree in elementary/special education (1986) and a master’s degree in elementary education (1991), both from Northern Arizona University.

In her current position, she helps arrange student visits, process purchase orders and helps out where needed in the front office. She said she has enjoyed meeting new and interesting people.

Her hobbies include reading, cross-stitching pictures and being outside, including in their front yard. Shea and her husband, Larry, have a shooting range in the front yard of their home near Colman.

AMBER VANDERSNICK
SAFETY CONSULTANT

Vandersnick began her position within Engineering Extension Sept. 4, filling a position that had been open since Greg DeRynck became the program director.

Engineering Extension administers South Dakota’s OSHA Consultation Program. Through the program, consultants trained in federal Occupational Safety and Health Administration regulations assist South Dakota employers in providing safe, healthy and productive work environments. There is no charge to employers for the site audits and industrial hygiene monitoring done by the consultants.

Vandersnick got into this field in 2006 after originally pursuing an ag career.

She graduated from State with bachelor’s degrees in biology (2003) and animal science (2005). During those years she was a member of the SDSU Boxing Club and the SDSU Women’s Rugby Club.

Vandersnick began her career in health safety while working at the Brookings location of Syngenta Seeds from 2006 to 2016. She then worked as the occupational safety and health manager at the South Dakota Safety Council from 2016 to 2018.

In 2015, she received an online associate degree in occupational safety and health from Columbia Southern University in Orange Beach, Alabama.

She and her husband, Nathan, live in Brookings with their two daughters, Katie, 7, and Emily, 4. Vandersnick enjoys reading, crafts, hunting and fishing. She added that she is “very happy about returning to the beautiful SDSU campus.”
BRENDA PRATT
PROGRAM ASSISTANT

Pratt is headed toward her one-year anniversary in agricultural and biosystems engineering. She joined the department Nov. 1, 2017, after moving to White from Illinois, where she worked in purchasing for an insurance company.

Her background also includes working as a telecommunications technician installing, removing and testing phone lines. She also has worked as a technical service representative for a cell phone company troubleshooting problems with phones, music and paging issues for retail customers.

Her education includes a bachelor’s degree in computer information systems from DeVry University in 1999.

In her current position, she handles personnel paperwork, budget forecasting, event coordination, grant management and “whatever else comes up. There is never a dull day. I enjoy working with the students and faculty.”

When not at work, Pratt enjoys going on motorcycle trips with her husband, Cliff; spending time with their five grandchildren, reading and playing with their Great Dane.

The Pratts have one daughter, Melissa (Brian), who lives in Hendricks, Minnesota.
FINAL EQUATION
KEMP COMPLETES 42-YEAR CAREER IN MATH DEPARTMENT

If Professor Dan Kemp’s career could be defined by a calculus problem, it might be stated something like this: If the summation of all the fountain pens he owns represents the number of times he taught calculus classes, how many pens would Kemp own?

To complicate the problem, the teacher himself doesn’t know the answer. He began collecting fountain pens about 40 years ago when given one by a graduating student. His collection now fills a couple of display cabinets—more pens than he has had time to count.

But that could change.

After 42 years of teaching at South Dakota State University and 51 total years of teaching higher education, Kemp is retiring after fall semester.

“Literally, I’m getting tired,” Kemp said in explaining why the time was right for retirement. “At the end of the day, I do not have as much energy as I would like. I don’t move as fast as I used to and the technology is getting out of control for me, too. My students are all two-thumbed texters and communicate through social media.

“I don’t do any of that. I feel like if I would stay at the university, I would have to learn new technology and I don’t have the energy for that. As my wife’s doctor says, I have had too many birthdays.”

On July 12, Kemp marked his 77th birthday, two days before the start of the Brookings Arts Festival. It’s an event for which he has served on the organizational committee since 1980. He got involved through his hobby as a woodworker. Kemp, an Illinois native, plans to continue pursuing both interests in retirement.

As for those shelves and shelves of calculus books, Michele, his wife of 51 years, has already told him they’re not coming home.

‘STUMBLED’ INTO JOB AT STATE

But they, like those fountain pens and his position at State, have served him well. “I feel like I’ve had a real privilege to be able to teach here for so many years and interact with so many good students. I feel I was very fortunate to stumble onto South Dakota State University.”

Stumble is a good description. In summer 1976, he was an instructor in Oklahoma State University’s math department after having finished his doctorate there the year before. A friend told him that SDSU was hiring algebra instructors, so he drove up for an interview. Department head Ernie Richards liked what he saw and extended a contract.

By August, Kemp, then 35, had an office in what was commonly known as the HEN House (home economics and nursing; now Wagner Hall.)

The department later moved to Harding Hall. In the former dormitory, “we were fragmented. We were on different floors.

Some were in different buildings,” Kemp said. Most of his contemporaries never reached the promised land—the state-of-the-art Architecture, Mathematics and Engineering Building that opened in 2015.

MATH DEPARTMENT: BIG FAMILY, MANY GRANDFATHERS

Kemp lists the move as a crowning memory in his career. “The AME will always be very important. We feel more like a mathematical family here,” he said.

With such a large family (there are about 35 faculty members), there are always new faces. But it’s also a family marked by longevity. Don Struck retired a couple of years ago after 51 years. Thomas Roe retired last spring after 35 years. Former department head Ken Yocum served 43 years. The departmental glue, secretary Linda Wendt, has been there since 1984.

“I think we all get along. There are not many divisive people in the department. We’ve always had good leadership. The department head was always responsive to the needs of the faculty. They were good people to work for,” Kemp said.

Kurt Cogswell, who has been department head since 2004, gives credit back to faculty like Kemp. “Dan is a wonderful colleague who has helped establish the strong, positive culture in the department. With his unwavering commitment to our students and his willingness to do whatever it takes to keep the department moving forward, he’s been an example for all our faculty.”

AN HONOR TO TEACH HONORS CALC

Kemp could have taken early retirement in 2001 or traditional retirement in 2006, but never considered it.

“The last 10 to 15 years I’ve primarily been teaching Honors Calculus I, II, III—that’s really what kept me here long past retirement years. Honors students are so much fun to react with and teach,” said Kemp, who was an Illinois State Scholarship recipient when he graduated from Riverside-Brookfield High School in 1959—59 years ago.

While Kemp could have taught the parents of his current students, “Dr. Kemp loves learning about new technology and incorporating it into his teaching,” said Drue Miller, a senior math major. “He taught us how to use an advanced calculator and program certain equations into it to use later. He also uses different graphing tools online and takes full advantage of every opportunity to learn new things.”

Of course, calculus itself is as old as Isaac Newton.

When asked what his early students would think of the calculus classes he teaches now, Kemp said, “It hasn’t changed a whole lot. Calculus hasn’t changed. High-powered calculators
were available in late 1990s. We still use high-powered calculators; they’re just better now. The content hasn’t changed.”

HONORS STUDENTS WANT CHALLENGE

That’s not to say he is still using those mimeographed handouts. Especially with teaching honors classes, there is opportunity to introduce new problems.

“I have opportunity to read some new mathematics and involve that in the course. I went to a lecture and listened to a problem that (renowned mathematician) Leonard Oiler solved. I took that back and thought about it for a bit.

“I wrote it up into a form that students could use in Calculus I. It was hard for me to do. It took a lot of effort. It was new mathematics. I hadn't seen that type of problem before, but students really enjoyed it. The formulas seemed impossible to do, but with factoring, students were able to master it. I cut the problem into little steps and then the students were able to solve it,” Kemp said.

It is that “give me a challenge” attitude among honors students that have kept Kemp motivated to teach.

Miller said, “Dr. Kemp loves seeing his students succeed, but he also loves to give them a challenge. During the Honors Calculus series, Dr. Kemp would give us projects to apply the knowledge we have learned in the course to more complex problems. He loved working with the students and always had an open door for students to come and ask questions when they got stuck.”

HONORS FOR THE HONORS PROF

A Feb. 3, 2017, posting on the Van D. and Barbara B. Fishback Honors College Facebook page, read, “One important thing Dr. Kemp has done for the Honors College is create and teach the Introduction to the Independent Study course. This course helps students create a plan they can utilize while completing their independent study.

“Dr. Kemp’s advice for students is to concentrate on learning, not earning a grade. If you really learn the material, then the grade should follow.”

Kemp said he wanted to offer a course that would allow students to see the independent study as the highlight of their academic career.

Callie Duque, a May graduate now in graduate school at the University of Colorado, said, “He always has his door open for questions. He really wants students to understand the material. He had more office hours listed each semester than most of my other professors combined.

“He also emphasizes true learning through the projects that he facilitated—they are meant to walk students through history, background or procedure rather than just testing them on how well they can solve a certain type of problem.”

Kemp has received his share of more formal recognition from State as well:

- College of Engineering Teacher of the Year, 1979;
- Edward Patrick Hogan Award for Excellence in Teaching, February 2009;
- Graduation honorary marshal, December 2009.

But among the most treasured things Kemp will pack away this December, in addition to the surprise fountain pen he got from the Calculus III class a few years ago, are the memories of students like Duque.

“Dr. Kemp came to visit my husband and I and our new son in the hospital after his birth the Friday before finals started. He has been such a great mentor and friend, rather than just a teacher, to me and many, many other students over the years,” Duque said.

Dave Graves
Paul Carrette ’89 created a business after viewing a process that took too long to complete, and he thought there had to be a more efficient and effective way to complete it.

Carrette, a mechanical engineering graduate, developed the FlagShooter after he came home from work one day and saw a local utility worker trying to locate a line in his yard.

“I couldn’t get the idea out of my head … it was OK, I guess we are going to do this,” Carrette said.

He quit his job at POET as a mechanical engineer to develop a design for what would become the FlagShooter.

“There was a lot of failure, but they became little failure success steps,” he said.

The FlagShooter holds flags for locating utility and other lines. It looks like a long rectangle at the dimensions of 8 inches wide and 32 inches long. It has a handle for easy carrying. It is lightweight at 3 pounds, durable and takes just one hand to operate.

When the line is located, flags can be placed by pressing the bottom into the ground. Certain models hold a can of spray paint, which paint a path by squeezing the trigger. The idea is to save time and not require workers to get close to the ground by bending over to place flags. It even works in the frozen ground.

He began creating what this device would become in 2008.

“It was very small, just me, then grew to 10 employees,” he said.

Carrette had to learn all the design aspects of creating a product, including patents. He has seven patents for the FlagShooter, including a patented curve, which allows for better insertion into the ground.

“Design is the thing I like to do the most,” he said.

The FlagShooter devices and flags are created at Carrette’s facility in Garretson, just 20 minutes north of Sioux Falls. The products are made with rust-proof aluminum and composite plastics by Falcon Plastics, located in Brookings. The device only uses the flags made by the FlagShooter company. They are made specifically for the device. He said starting the flag process was more complicated than developing the FlagShooter itself.

Carrette started local so he could troubleshoot the product. People tested the product for about a year. He provides a warranty on the FlagShooter device, and he and his staff complete the repairs when needed. The line was first distributed in 2011.

“I had great clientele, pretty forgiving, a lot of small customers,” he said.

Now, he goes to trade shows and has distributors. He sells to 46 states and internationally. His product has been used when putting in pipelines in North Dakota and Texas. Carrette said his business is growing 25 to 30 percent per year since launching the FlagShooter product line.

While Carrette is using his education from South Dakota State to help develop his product line, he said that going to college helped him learn more than mechanical engineering.

“I think the rigors of college really formulate a person’s discipline ... I was a really hard worker,” he said. “Some classes in college I thought I would never need, but I ended up using them.”

Some of those classes included communication skills and time management, which are essential when owning and operating a business. One benefit Carrette did not have before the FlagShooter was the opportunity to get to work with his own family. He said that his wife and four kids are all a part of the business. He said getting to the point where he has a fully operational and successful business with other employees wasn’t easy.

“Anything that is worth it is typically hard,” Carrette said.

All of this came from one idea, one feeling, he just couldn’t shake when returning home from work.

*Heidi Kronaizl*
OLHAUSEN SCHOLARSHIP
’57 CIVIL ENGINEERING GRAD GIVING BACK TO PROGRAM

At any early age, Dale Olhausen knew what he wanted. With laserlike focus, he quickly reached that goal and now is funding a scholarship to help budding civil engineers reach their goal.

Olhausen, a 1957 civil engineering graduate, grew up on a farm near Hartley in northwest Iowa. But in high school he got a taste of engineering by helping his uncle at Kruse Engineering with surveying in nearby Spencer, Iowa. They traveled in Iowa and Minnesota, measuring points for irrigation ditches, streets and utilities.

Olhausen enjoyed the work and headed to State to make a career out of civil engineering; his uncle’s influence igniting the fire to have his own engineering firm.

“I thought we had some really good professors. Jim Dornbush was a favorite of mine,” Olhausen said.

Dornbush’s focus was water and sanitary engineering, so it’s no surprise Olhausen went that direction in his career. He also recalls Cal Vaudry, who later became head of Banner Associates, and Emory Johnson, department head. “Dornbush was the one I got the most out of in my classes. He made it interesting,” Olhausen said.

HOGAN & OLHAUSEN FORMED

In 1969, Rocky Mountain Engineering became Hogan & Olhausen as he formed a partnership with a surveyor with whom he was doing work in nearby Loveland, Colorado. The firm flourished with an emphasis on water and sewage systems.

Business was strong in the growing Front Range. Hogan & Olhausen expanded to 80 employees with 20 of them involved in aerial surveying and photogrammetric engineering.

“But we got too big, requiring more management. I worked long days and weekends, which was hard on the family. We split up the business, and I ended up with Landmark Engineering,” Olhausen said. That was 1982.

In 2002 he sold his Landmark stock to some key employees, including his son, Jeff, who is the president and chief executive officer. Olhausen still has an office at Landmark and oversees family corporation properties that are involved in developing residential subdivisions in Loveland.

MEMORABLE PROJECT

Among the hundreds of projects Olhausen has been involved with in the past 50 years, one that particularly stands out is a wastewater plant and collection system in Northern California.

The original design, crafted by one of the nation’s major engineering firms, was a typical mechanical treatment plant requiring a Class A operator. While state and federal funds were to pay for most of the construction costs, the property owners decided it would be too expensive to operate.

So Hogan & Olhausen (this was in the late 1970s) created a new design and relocated the treatment plant downstream and out of town at almost half the construction costs estimated in the original design. Plus it could be run by a Class D operator instead of a Class A operator, Olhausen explained. Located on the wild and scenic Klamath River, the plant design utilized existing fine beach sand to filter and purify the water.

“I put in a lot of hours,” he said.

That was Olhausen’s mode of operation throughout his career, especially those early years. “I’m kind of a workaholic to say the least,” he admitted. Now in his retirement years, he is focusing on estate planning, where his concentration had been on church and school charities. “The timing was right” when SDSU Foundation representatives visited, he said.

The initial visit was in 2017 and the scholarship was cemented this spring. The first Dale and Lynn Olhausen Scholarship in Civil Engineering was awarded this fall.

The quick start is because he committed upfront dollars to make the scholarship a reality and has also endowed the fund.

“Lynn and I hope the students receiving this scholarship will not only complete their education and make their mark in the world, but they also will make the world a better place,” he said.

Dave Graves
“Joe, remember you owe something back.”

Those words, made by one of Joe Vogel’s former professors, stayed with him through the decades and influenced his current giving to his alma mater and the Jerome J. Lohr College of Engineering.

Vogel, 89, of Prescott, Arizona, is a 1958 electrical engineering graduate. He spent 21 years with Eastman Kodak Co. in Rochester, New York, developing computer software for various manufacturing and corporate projects. He retired in 1987 at age 58 and pursued aerial photography of Native American archeology sites. He photographed 1,100 ruins, taking 15,000 digital images.

It was in the 1980s when Junis Storry visited Vogel while he was attending a conference at Rochester Institute of Technology. Storry, an electrical engineering professor who had Vogel for one class, spent 36 years at the college and was dean for 10 years. Vogel said he knew that Storry’s comment had double meaning—giving back to society and giving back to his school. Vogel didn’t struggle with the admonition—“My character would have been that way,” the Springfield, Minnesota, native said.

His giving began before the Phonathon, which originated in 1982. He received a mailing and responded with a $35 or $50 check, Vogel recalled.

INVESTING IN FUTURE GENERATIONS

Through the years, as his stock market investments paid off, he was able to increase his giving and has been a longtime donor to the Electrical Engineering Excellence Fund. He recently has become more active, using an IRA contribution to reinforce his funding of three scholarships:

• Joseph P. Vogel Scholarship in Computer Science or Electrical Engineering;
• Joseph J. and Katherine M. Vogel Scholarship Endowment; and
• Joseph P. Vogel Aviation Scholarship.

Vogel also was a donor to the dean’s office renovation project in Crothers Engineering Hall. (See separate story P. 6 on that work.)

PUTTING WINGS TO HIS GIVING

Most unique of his contributions to SDSU is the gift of a 1967 Citaborea airplane with 2,500 hours. He had owned the plane for 20 years, but decided because of declining vision it was time to quit flying. Chris Funk, director of maintenance for SDSU’s aviation program, flew into Prescott June 13 and flew the plane to Brookings.

The Citabria (airbatic spelled backward) is a light, single-engine, two-seat plane designed for flight training, utility and personal use.

Cody Christensen, director of SDSU’s aviation program, said, “This airplane will allow students to fine tune their flying while experiencing the challenge of a conventional gear airplane. It will really help students fine-tune their rudder control and ultimately make them a better, safer pilot. It will also qualify students for an additional FAA endorsement.

“This airplane is a very generous gift on Mr. Vogel’s part and we are excited to integrate it into our professional pilot curriculum.”

He added that the red-and-white airplane, dubbed “Tabby” by Vogel, will be useful for students pursing aerial agricultural applications because it is most like those used in that field.

The Citabria is the ninth airplane in the SDSU fleet and the first donated aircraft.
Vogel also sold a 1958 Beechcraft Bonanza after flying it for 3,500 hours and owning it for 42 years. He gave the money to SDSU for scholarships. “The planes were old and dear friends,” he said.

ONE LAST FLIGHT

He said his last flight in the Citabria didn’t carry great emotion, just relief.

A concern when landing a Citabria is doing a ground loop, which has the tail swinging around to the front. Never in his years of flying Tabby had Vogel ever done a ground loop. After doing about an hour’s worth of turns and descents, Vogel was ready to come in for a landing at Ernest Love Field, 8 miles north of Prescott in the Phoenix area.

“The only emotion was, I’ve got to do the best landing I’ve ever done in my life. Boy, I was right up there making sure I didn’t do a ground loop on my last flight,” said Vogel, who was successful in his final landing.

His first landing was 70 years earlier at Springfield, where he soloed at age 19 in 1948. “I got in 10 (training) hours and soloed, but didn’t have any money to continue.” Vogel didn’t return to the cockpit until fall 1957, his senior year at State, after having a good-paying summer job working on power lines with the U.S. Bureau of Reclamation.

He purchased his first airplane—the Bonanza—in 1972. “Man, I was in my glory,” he said.

LIFE’S FIRST TURNING POINT

That wasn’t the Joseph Vogel who went to Springfield High School. He said he did poorly in high school. After high school, he spent three years working in Springfield as a clerk, a movie projectionist and, lastly, an apprentice electrician. In 1950, with the Korean War underway, Vogel joined the U.S. Navy.

During basic training, he was ordered to report to a building. Vogel wondered if he was about to be kicked out. Instead, he was asked if he would be interested in going to Officer Candidate School based on tests indicating he was a good candidate. Vogel called it one of two turning points in his life.

“I knew I wasn’t stupid at that point,” he said.

LIFE’S SECOND TURNING POINT

In the Navy, he was trained as an electronics technician. Vogel got out of the Navy in 1954 and drove the 85 miles from Springfield to Brookings to visit South Dakota State. There he met Harold Crothers, dean of engineering, who told him, “You will graduate and you will get a job.” The confidence the longtime dean had in Vogel was the second turning point in his life.

While in college, he was experiencing a technological point. Computers were finding their way out of the research lab and into industry and the military. In the Navy, he worked with Loran, a vacuum-tube device that was an early forerunner to GPS.

“I was just intrigued by their ability to do things,” Vogel said.

He got a job working with computers at Remington Rand UNIVAC in St. Paul right after graduation. This computer, which weighed 29,000 pounds and took up the space of a basketball court, was used for tracking payroll, accounting and capital assets. Vogel worked with a mathematician, who was using the computer to calculate a very complex formula.

That same year, 1958, he worked on the first all-transistorized computer, which was the brain for a missile interceptor that Bell Labs was designing.

Vogel earned an MBA from the University of Minneapolis in 1963, worked at General Dynamics/Astronautics in San Diego from 1963 to 1965, and then joined Eastman Kodak. “I loved it. I went from project to project” in a supervisory role. “I did like to be on the leading edge,” he said.

Today, through cash, in-kind and estate gifts, Vogel has fully applied the directions of his former professor.

Dave Graves
Brandon Alberts, '11 mechanical engineering, and friend Morgan Holler, '10 plant science, developed the mobile app and website My Ag Report this spring. It is designed to reduce the amount of time needed to complete mandatory paperwork for herbicide application by gathering from the internet data on location, wind speed and other weather information. The app, a free download, was launched in May. There is a $49 annual fee to login to access the data. Alberts and Holler, Langford-area farmers, said it was a three-month project to develop the app.

Alberts said the work started “shortly after the new dicamba regulations came out, so we had a very tight timeline to get it out before the 2018 spray season. I work a day job as a director of manufacturing and farm on the side, so many of our conference calls took place in the cab of the tractor while planting.” This is the first app that either of them had created.

“We plan to build on the foundation we have created with this app to bring more value to farmers with additional features. The immediate objective is to improve our marketing so farmers know we exist,” Alberts said.

He said they didn’t write the coding for the app, rather, “we used our self-taught technology knowledge to craft the entire system on paper so it could be coded by someone who has zero knowledge of farming. Like any engineer, we persistently sought information to acquire the necessary knowledge to leverage all resources to make a better world,” Alberts said.

Deidre Beck ’16 joined Banner Associates, Brookings, as a staff engineer in its water resources department in April 2018. Beck, originally of Pierre, holds degrees in civil and environmental engineering and Spanish. Following graduation, she participated in the Princeton in Latin America Fellowship, during which she served as the external relations coordinator with Unidad Academica Campensis de Carmen Pampa, a university in rural Bolivia.

David Brooke ’05 has been promoted to operations manager at Hensel Phelps in Denver.

During the course of his 13-year career, all at Hensel Phelps, he has completed $934 million worth of projects. Presently, he is overseeing the Lockheed Martin Space System’s $350 million design-build Gateway Center project. As operations manager, he will be responsible to the firm’s clients for providing the leadership and vision needed for the success of each project.

He also serves as the chair-elect of the Associated Builders and Contractors Inc. Rocky Mountain Chapter and will serve as chair in 2019.

Noel Christensen, ’61 civil engineering, died July 4, 2018, at Kaiser Permanente Hospital in Fontana, California.

Christensen, 82, of Redlands, Calif., was born Nov. 12, 1935, in Walnut Grove, Minnesota. He was raised on his parents’ farm and served two years in the U.S. Army. He married Rita Wilt on May 4, 1957, in Lamberton, Minn., and headed to State in the fall.

Upon graduation, he and his wife moved to Rialto, Calif., where he worked for CALTRANS. His career also included being Rialto city engineer, working for the city of Riverside, serving as vice president of Lampman and Associates, and founding CG Engineering, where he was president for 30 years. The company was the contract engineer for several cities.

After selling the 35-employee firm, he continued providing contract engineering services and expert legal opinions in various lawsuits. His funeral was at Holy Name of Jesus Parish, Redlands. Survivors include his wife, four children, seven grandchildren and a great-grandchild.

The family asked that donations be made to South Dakota State University.

Tim Jensen ’93, of Sioux Falls, was appointed to the Dean’s Advisory Council in April.

A licensed electrical professional engineer, he has been managing principal of TSP’s offices in Sioux Falls, Watertown and Omaha, Nebraska, since 2012. He joined TSP (formerly Spitznagel) in 1996. Duties include oversight of operations and staff management, project management, business development and community relations.

The appointment to the 21-member council is for a three-year term.

John Kappenman ’76 received the Wayne Knabach Excellence in Power Award from the Center for Power Systems Studies at the group’s 50th anniversary banquet Oct. 1. (See separate story Page 12 on the center’s history and impact.)

Kappenman, an independent storm analysis consultant in Duluth, Minnesota, researches geomagnetic storms, electro-magnetic pulses and their disruptive effects on electric power systems. He has testified before the U.S. House Science Committee on the importance of geomagnetic storm forecasting for the electric power industry.

Kappenman previously was employed at Minnesota Power and Metatech Corp. He is past chairman of the IEEE Transmission and Distribution Committee.
DAVID MAHONEY, ’84 civil engineering, was promoted to head of the alternative project delivery operating unit at Dewberry.
An executive vice president who has been with the firm for more than 30 years, Mahoney has extensive experience directing large-scale transportation engineering projects, including major design-build initiatives throughout the Washington metropolitan area.
In his new role, he will oversee Dewberry’s vertical, horizontal, and water/wastewater design-build services nationally, including public-sector facilities as well as major bridge, highway and transit projects. Mahoney has been responsible for the successful delivery of more than $6 billion in highway and rail projects, including the Dulles Corridor Metrorail Silver Line Phase II; the Route 28 improvements project built using Virginia’s Public-Private Transportation Act and the Dulles Greenway in Northern Virginia.

JASON NIEMANN, ’11 ag systems technology, died April 23, 2018, at Rock Rapids (Iowa) Medical Center.
Niemann, 36, of Rock Rapids, worked as a lineman, trained linemen and at the time of his death was designing electrical system upgrades for DGR Engineering in Rock Rapids.
Niemann attended school in Bridgewater and graduated from Emery High School in 2000. He attended Mitchell Technical Institute for powerline construction and maintenance before enrolling at SDSU.
Survivors include his wife, Crystal (Cotten), two sons, Coy, 6, and Knox, 2, all of Rock Rapids; his father, Kenny (Jackie Weiss), of Arlington; his mother, Barb Niemann, of Bridgewater; his in-laws, Gary and Paulette Cotten, of Watertown; and four siblings. He was preceded in death by two brothers.

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WES TSCHEFFER, ’69 ag engineering, was one of six who were honored at Distinguished Alumni during the Hobo Day observance Oct. 12-13.
Tschetter retired in June as the university’s vice president of finance and business. He was director of the Legislative Research Council in Pierre when asked in 1982 by then-President Sherwood Berg to serve as SDSU’s chief financial officer.
For 36 years his responsibilities included the operating budget, accounting, purchasing, payables, receivables, property acquisition and providing financial management for the construction of $500 million worth of investments in research, academic and residence halls as well as other student services facilities.

HEATH VONEYE ’02/11 civil, began Aug. 15 as Watertown city engineer after serving as city engineer in Gillette, Wyoming, since January 2012. In his new position, VonEye oversees a $5 million capital improvement budget in addition to staff and operating budgets.
He served as public works director in Madison from November 2007 to March 2011 and was assistant city engineer in Brookings from January 2006 to November 2007. VonEye was raised on a farm near Flandreau. He and his wife, Candice, have five children: Javon, 18, Tyler, 16, Gerrit, 14, Cedrick, 13, and Harley, 12.

JODY PAGE, ’99 civil engineering, died Nov. 10, 2018, while on a hunting trip with friends near Lemmon.
Page, 42, of Rapid City, graduated from West Central High School, Hartford, in 1994 and enlisted in the 114th Fighter Wing of the South Dakota Air National Guard as well as enrolling at State.
At the time of his death he was a lieutenant colonel and commander of the civil engineering squadron. Page was deployed three times to the Middle East, most recently in 2017. As a civilian, he was employed with HDR Engineering for nearly 20 years and had recently been selected as associate vice president. He was an anchor of the HDR South Dakota expansion to Rapid City 12 years ago.
Survivors include his wife, Tracy (Darrough), and two daughters, Jordyn, 10, and Reagan, 8, as well as his mother, Cherry Page, his father, Jerry Page, a sister, Lisa (Scott) Raabe, and a stepsister, Jinny (Mike) Struck.
DEAN'S CLUB
FROM MARCH 16, 2018, TO OCTOBER 4, 2018

Dean's Club membership consists of alumni and friends who have contributed $500 or more annually to the Jerome J. Lohr College of Engineering. Dean's Club members are recognized as devoted friends of the college who make a significant impact on the college's future. They also receive invitations to special college and university functions and updates from the dean.

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A girl, Elizabeth Claire, was born to mechanical engineering faculty members GREG AND SARAH MICHNA, of Brookings, at Brookings hospital July 28.

MICHAEL PAWLOVICH, who joined the civil engineering department last year as a lecturer in transportation, has been promoted to assistant professor. He continues to teach two classes per semester with research and service duties being added to his plate. Pawlovich came to SDSU from the Iowa Department of Transportation, where he was a transportation engineer specialist.

LELA SANDFORT, wife of former mechanical engineering department head John Sandfort, died Sept. 20, 2018, at Concordia Retirement Center, Bella Vista, Arkansas, at the age of 105.

John Sandfort was department head from 1958 to 1977, coming here from Iowa State. Lela Sandfort was president of the SDSU Faculty Women’s Club. They moved to Bella Vista in 1979. John Sandfort died in 2010 at age 99.
“Set it, and forget it” was the slogan used by the infomercial pioneer Ron Popeil to pitch his invention, the Showtime Rotisserie. He used this phrase to describe the ease of cooking with his new kitchen gadget. The goal was getting audience members to believe that starting something is all you needed for a favorable outcome. No additional attention was needed, and you could give your attention elsewhere. What a simple concept.

This concept might work well for selling products via infomercials but it is not the best approach for a sustainable scholarship. All scholarship support is helpful but additional attention is needed when creating a scholarship that will grow over time and have similar impact both today and in 10 years. It’s not as simple, as “Set it, and forget it.”

The Jerome J. Lohr College of Engineering’s role is to create the engineers, data scientists and construction managers needed to fill the needs of South Dakota, the region and the world. They will solve our greatest challenges and build our future. An effective way to help create new engineers is to reduce their cost of getting a degree from SDSU.

Whether the scholarship is funded annually or endowed, the only way to insure the continued impact is to periodically revisit the scholarship plan. For example, a $1,000 scholarship in 2004 would cover approximately 25 percent of a student’s tuition and fees. That same $1,000 scholarship covers less than 10 percent of their tuition and fees in 2018. The generous gift that created the $1,000 award is helpful. In 2018, however, it does not have the same impact.

Creating a new scholarship is an exciting way to make an immediate impact in developing the engineers and builders of the future. We encourage everyone to consider how you might be able to start a scholarship at SDSU and also how you can develop a plan to insure sustained impact in the future. In the case of annually funded scholarships, this would mean increasing your gift periodically or for endowed scholarships, it would mean adding to the principal every five years. The SDSU Foundation is ready to discuss scholarship needs and the options available for sustaining the impact.

In closing, another phrase popularized by Ron Popeil in his infomercials was “But wait, there’s more!” This exciting phrase left listeners waiting for the additional offer making the deal even better than before. The Jerome J. Lohr College of Engineering is ready to produce “more” engineers to solve the future challenges of our world. Accomplishing this will require “more” impactful support both today and in the future.

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