



IMPULSE

JEROME J. LOHR COLLEGE OF ENGINEERING



CROTHERS
ENGINEERING
HALL





Bruce Berdanier
Dean, Jerome J. Lohr
College of Engineering

MORE ENGAGEMENT, INNOVATION AND SUCCESS

Greetings from Jerome J. Lohr College of Engineering,

It's hard to imagine what our college will be like in the future. It seems like every day I'm reading about new models of offering courses and competencies through subscriptions and new types of relationships with companies. We know higher education is changing, and we have to move with the times to attract more students, address their learning needs and styles and fulfill the needs of our companies for workforce development.

A SALUTE TO RICH REID

Another thing that will be hard to imagine is how the college will function without Rich Reid. Rich has been with us for 25 years and has successfully led our internal academics and national accreditations.

He's done much more for SDSU and the state of South Dakota through his leadership as our NCAA representative as well as supervising the activities of Engineering Extension and the Local Transportation Assistance Program. Rich has been our main regional and international recruiter of new students, and together he and Becky Pistulka organize and run all of our K-12 outreach and career fairs.

I'm pretty exhausted just thinking about all that Rich does. I hope many of you will have the opportunity this spring to thank Rich for all of his service to SDSU and South Dakota. We will honor all of his service with a celebration later this spring.

A SALUTE TO LARRY WEISS

Larry Weiss will be recognized at the Lohr College of Engineering Awards Banquet April 29 as the 2020 Distinguished Engineer. I first met Larry when I was teaching West River in the mid-1990s and have run into him continuously throughout my career. Larry might tell you that I've been following him around. He might also tell you that he has had four or five careers in South Dakota.

Larry's life is an impressive account of service to the transportation industry in South Dakota, and I encourage all of you to consider coming to the awards banquet to honor Larry's career.

SETTING A PHILANTHROPY PLACEMAT

The college's departments and I started working two years ago on our plan for how we would support the university's Imagine 2023 strategic plan for the next five years.

We integrated that plan with a philanthropic decision ladder that shows the resources we will need to acquire to be successful to address the societal initiatives to meet our mission as a college. Our Dean's Advisory Council and some of our Industrial Advisory Board members will be discussing the plan as well as our targeted marketing efforts to improve recruitment at the end of April.

If the article about the philanthropy placemat raises any questions or interest for you, please contact me or Tom Becker. We would be thrilled to discuss it with you.

AN ECOSYSTEM OF INNOVATION

One of our most exciting projects over the next five years will be building and strengthening our relationship with the Research Park at SDSU.

Read about our plans to create an ecosystem of innovation for the Lohr College of Engineering students, faculty, industries and Brookings community. Also, 24 engineering students formed teams and participated with the Ness School of Management Students. Our students won seven of the eight top awards in the fall Brookings Student Business Plan Competition. We hope to see them successfully compete in the Governor's Giant Vision competition this semester.

As I said last year, it is my distinct privilege to lead the college. I am so impressed and pleased with the engagement and success of our student clubs and teams. The new High Impact Team center we are planning at the Research Park will help propel us to a higher level nationally. We are humbled by your amazing support, and we thank you all for the contributions that you make to support the Lohr College of Engineering.

The SDSU campus is coming out of hibernation. I sincerely hope you have a chance to visit us as we move into the future and honor our history.



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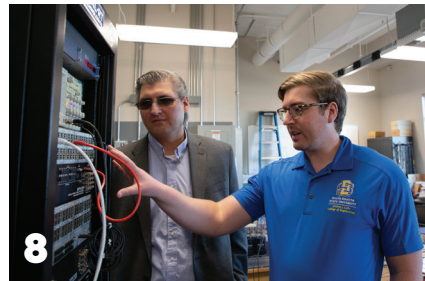
ABOUT THE COVER

RICH REID, associate dean for academics and engineering extension, steps away after spending 25 years with the college.

SEE STORY PAGE 2.

IMPULSE

SPRING 2020



FEATURES

- 2 | RICH REID RETIRING
- 6 | THE KONDA CONNECTION
- 8 | MAJOR GRANT FOR POWER SYSTEMS RESEARCH
- 10 | A DRONE THAT CAN CARRY HUMANS?
- 12 | NEW DEPARTMENT HEAD FOR EE/CS
- 14 | THE MAKING OF MEDQ SYSTEMS CONSULTING
- 15 | DEAN'S ADVISORY COUNCIL PROFILES
- 16 | DISTINGUISHED ENGINEER LARRY WEISS
- 18 | VITAL STATISTICS
- 20 | ENGINEERING MEETS ENTREPRENEURSHIP
- 22 | FACULTY AWARDS
- 24 | LINDA WENDT RETIRING
- 25 | STRATEGIC PLAN IN PLACE
- 28 | DEAN'S CLUB
- 30 | HIGH-IMPACT TEAM CENTER PLANNED
- 32) RESEARCH TAKES OFF FOR NEW FACULTY MEMBER
- 33) TYLER HANKS COORDINATES AME PRODUCTION LAB
- 34) ALUMNI NEWS
- 35) YOUTH CAMPS
- 36) CELEBRATING SDSU ENGINEERS



REID RETIRING

A SALUTE TO THE DEAN OF POSITIVITY

Pessimism and negativity never found a corner to grow in during the 25 years Rich Reid has been walking the corridors of Crothers Engineering Hall.

Known far more by the spring in his step and the smile on his face than the titles on his door, Reid has seemingly been every students' best friend, at least within the Jerome J. Lohr College of Engineering. Next semester that designation will be up for grabs because Reid, associate dean for academics and engineering extension, will retire June 19.

"He had such a positive energy about him that it was difficult for everyone else not to feel upbeat," said Laura Baumburger, who earned her bachelor's in civil engineering in 2002.

Reid arrived at State March 13, 1995, as an assistant professor in civil engineering after completing his doctorate at Georgia Tech.

The Kennebunkport, Maine, native went to college at The Citadel, earning his bachelor's in civil engineering in 1981. His first assignment in the U.S. Air Force was at Ellsworth Air Force Base (1981-84). Uncle Sam then sent him to Georgia Tech (1984-88), where he earned his master's degree (civil, 1987) and started his doctorate.

He worked on his doctorate in absentia from 1988 to 1994 and then went back to Atlanta in 1994 for eight months to finish his dissertation.

During his time away from campus, Reid was the survivable structures program director at Tyndall Air Force Base, Panama City, Florida. "Essentially, we developed ways to build structures to resist explosions or how to repair bomb-damaged facilities. In the end, we built stuff and blew it up," he said.

THE PATH TO HIGHER ED

While that doesn't seem like a path to higher education, but Reid said it was.

"When I was working in the Air Force research lab, I also was funding some university research and that kept me in touch with college professors as well as attending technical conferences, which also allowed me to network with a lot of university faculty.

"During that time, I began to see college teaching as a good next move with the added benefit of being able to work with young people, who I was always comfortable working and spending time with. So, teaching at college allowed me to continue that interest," Reid reflected.

He left Air Force active duty in 1994 to finish his research and dissertation at Georgia Tech. "Kathy and I were looking for a position in New England to be near my family or in Rapid City, which is where we met," Reid said. Kathy had a civilian position at Ellsworth Air Force Base, where Reid was assigned from 1981 to 1984.

During his first year at SDSU, Reid "wound up working with Virgil Ellerbruch, who was the assistant dean of engineering. I remember thinking Virgil had a great job, which at that time seemed to be a position held by former department heads. I assumed I'd have to work up to become a full professor and department head, and maybe toward the end of my career I'd get to be the assistant dean like Virgil.

"I just happened to skip a few steps in achieving that goal."

MOVING INTO ADMINISTRATION

Reid jumped straight from faculty member to acting assistant dean July 1, 2001, with the retirement of Ellerbruch, who by that time was serving as co-dean.

At the time of his appointment, Lew Brown, the new dean, said, "Reid is an outstanding teacher and adviser who is well known as an advocate for students. He has a great enthusiasm for careers in engineering and technology and it shines through to our students and the public. His interests in academic program assessment and accreditation are also essential assets for his new position.

"He is the ideal person for our acting assistant dean position and I look forward to working with him."

Apparently so, because "acting" was stripped from his title July 1, 2002, and he became associate dean in 2010.

"I think the progression (into administration) was finding a position where I might be able to impact a greater population of students and families, which seemed more attractive," said Reid, whose initial focus was on preparing for the 2003 accreditation

From left, Lt. Col. Rich Reid, his father, Col. Wallace Reid, Lt. Col. and brother Bob, and daughter and Staff Sgt. Lindsey Reid pose after the 2007 Memorial Day parade at Kennebunkport, Maine, the Reids' hometown.

team visit. He also worked in academic advising, evaluation of transfer credits and freshman orientation while continuing to teach some.

Following the 2002 appointment, Reid said, "It's my belief that excellence in teaching means plenty of contact with students, professors being mentors and developing lifelong relationships with the students. That's what we have here at SDSU, and I'm proud to be a part of it."

'LIFE IS ABOUT RELATIONSHIPS'

Brad Beck, a 2001 civil and environmental engineering graduate, said, "Rich made a huge impact on my life, both during and after my time at SDSU. Rich not only wanted us to advance our civil engineering knowledge, but he also wanted us to grow as people. You always knew Rich cared about you as a person and nobody was ever just a number in his eyes.

"Whenever I have needed any help or advice in the past 20-plus years, Rich was always more than willing to take time out of his already busy day to jump in and help. It's these relationships that make SDSU such a special place, and I can't thank Rich enough for investing in me, both as a student and as a person."

In his classroom days, Reid taught geotechnical and transportation engineering courses with an emphasis on relationships.

"I was privileged that so many (students) would allow me to be a part of their life. Life is about relationships, and I treasure those relationships and memories," he said.

RECALLS DAYS AS ASCE ADVISER

Reid also treasures the five years (2005-10) he spent as adviser of the student chapter of the American Society of Civil Engineers. "I was always impressed by the time and effort the students made on behalf of the chapter and how they never would back out of a challenge and always wanted to excel. They wanted to make sure SDSU stayed on the national radar and were very successful in doing so," Reid said.

The chapter won the Ridgway Award for having the outstanding chapter in the nation in 1999 and 2004.

During 2003-04, the chapter president was Carrie Buthe and her husband, DJ, was a vice president. He recalled, "We had a son, Brayden, in 2001 and could not have gotten more support and love from the staff in the CEE department. Carrie and I were both heavily involved in ASCE and were always in Crothers for what seemed like all hours of the day. Brayden was known to hang out there as well.

"I'm sure he still holds the record for most ASCE meetings attended by a child. Rich would always make us feel welcome, spend time with Brayden and even invited our family over to his house for supper. We often joked that Brayden spent more time in Crothers than most engineering students.

"If it wasn't for the support of Rich and the other faculty, it would have been very easy to make excuses not to finish school. Rich will always have a special place in our hearts."

SIMPLE ACT LEFT BIG IMPRESSION

By the time Reid was the associate dean, he was no longer in the classroom, but his office door remained open.

Chris Jankowski, a 2015 civil engineering graduate, said, "I stopped in randomly at Crothers after graduating (2018, I believe) and found him down in the basement (this was during the renovation) and unprompted he met with myself and another Air Force engineer for at least an hour. We talked about Ellsworth AFB and how some of the things he'd planned and programmed as an engineer were there at the base and how things were changing and what projects we were currently targeting.

"First, I want to point out that most people in positions like he is and as busy as he was did not have to give my friend and me that much time of his schedule. I'd always respected Dr. Reid, but that impromptu meeting definitely solidified how much I admire and respect him."

Reid's interaction with Jankowski is typical, according to Russ Chavez, director of Veteran Affairs on campus.

"From visiting, at the last minute, with a veteran who is a prospective engineering student to presenting our annual workshop on resume writing and interviewing preparation, Dr. Reid was always there for us. He has been one of the most influential and supportive individuals for SDSU veterans on this campus," Chavez said.



Rich Reid views construction work at the Panama Canal during a tour while attending the international convention of the American Society of Civil Engineers in 2014.



Reid and his wife Kathy, a 1977 secretarial sciences graduate from SDSU, will celebrate their 35th anniversary June 1.

Rich Reid gathers with his children for a 2013 photo. He is now retired from the Air National Guard, but Tim is a military doctor at Grand Forks (North Dakota) Air Force Base, Becky (center) is a military nurse at Joint Base Elmendorf-Richardson, Anchorage, Alaska, and Lindsey is a member of the South Dakota Air National Guard in Sioux Falls.



APPLIED SKILLS TO MILITARY SERVICE

Reid's service in the Air Force National Guard overlapped most of his SDSU career. He joined in 1996 and retired in 2011.

He was a civil engineering officer and then became the 114th Civil Engineering Squadron commander for the Sioux Falls base in 2003. Fifty-two members of the squadron were sent to Iraq in mid-April 2003, just a month after the first airstrike, to build a "bare base" at an airfield that was captured earlier in the war.

Reid spent the initial portion of his tour in Iraq as the base civil engineer and squadron commander at Baghdad International Airport. He was the first Air Force base civil engineer at the airport responsible for designing the Air Force bare base and initiating construction within days of his arrival before later rejoining his unit at the Tallil Air Base.

Starting in an extremely austere environment with limited tools, equipment and materials, the engineers of the 407th Air Expeditionary Group Civil Engineering Squadron built infrastructure and buildings to support more than 1,200 Air Force personnel and assigned aircraft. Temperatures at Tallil reached 130 degrees and frequent dust and windstorms added to the challenge.

DEPLOYMENT: DIFFICULT, REWARDING

Reid said, "It was by far the most difficult, challenging and hardest thing I did (in the military), but it was by far the most rewarding."

Describing the challenges, Reid cited: "The intense pressure to get things done in not enough time without enough (at sometimes, if any) resources. The endless days of long hours, little sleep, an MRE per day (or maybe two), going for four months where everything you ate was processed food coming out of a

package (no fresh foods of any type), weeks before your first shower, etc.

"Of course, family separation, personal danger, uncertainty as to how long you would be away, all contributed to the challenge. Luckily, you got through some of those times because of the great people you served with."

He spent four months in Iraq and was never redeployed. He served willingly, but it didn't give him a desire to return to full-time active duty.

FAMILY TRADITION CONTINUES

Overall, Reid would say his military life was positive for his family. All three children followed dad's footsteps. Lindsey, a 2011 math grad now working in Omaha, Nebraska, is a member of the Air National Guard in Sioux Falls. Tim, an Air Force Academy graduate, is a military doctor at the Grand Forks, North Dakota, Air Force Base. Becky, a 2015 nursing grad, is a military nurse at Joint Base Elmendorf-Richardson, Anchorage, Alaska.

The military tradition began with Reid's father, Wallace, who was a colonel in the Air Force Reserve. His brother, Bob, was a lieutenant colonel in the U.S. Marine Corps.

Whether on military or academic assignment, whether leading a Scout troop, coaching a hockey team or serving on church council, "it comes down to being a positive person, being willing to help others, solving problems and responding when people reach out to me. Some days are better than others in achieving those goals. Next, you have to be enthusiastic about what you do and finally power through the challenges while being positive."

After June 21, the list of challenges include balancing trips to see grandchildren with plans to travel the U.S. and beyond.

Dave Graves



“LIFE IS ABOUT RELATIONSHIPS AND I TREASURE THOSE RELATIONSHIPS AND MEMORIES.”

- RICH REID, RETIRING ASSOCIATE DEAN

FAREWELL GATHERING

Reid will be honored at a 3 to 5 p.m. gathering at Woster Celebration Hall in the Alumni Center June 19.

STUDENT TESTIMONIALS

KRISTI GOEHRING

B.S. CE 1994, M.S. IN ENGINEERING 1996

I was in Rich's first graduate transportation class when he came to SDSU. I really enjoyed his class and the newness he had for SDSU. He just made class interesting and fun. I remember getting into a discussion on how to pronounce "creek" (creek/crick) after one project. I think it was a South Dakota thing.

I was really glad he was there. He was always easy to talk to. My fiancé passed away from cancer while I was trying to finish my master's and Rich and Dr. Rollag made that journey a lot easier for me and made sure I got it done.

ZACH GUTZMER

B.S. CE 2006, M.S. IN ENGINEERING 2008

Rich is one of the most respected and influential figures at SDSU. He blends professionalism, personality and experience in his leadership technique perfectly. Rich has a lasting positive impact on all engineering students before, during and after their time at SDSU.

KARI JENSEN

B.S. CIVIL ENGINEERING 2003

Talk about a professor making a difference in so many students lives. I got my master's in geotechnical engineering because of you. Your energetic spirit and logical teaching style, made what would become my 'Intro to Geotech' class, one of my favorite classes.

CLINTON KOEHN

B.S. CIVIL ENGINEERING 2007

Dr. Reid is the reason I took the path in engineering that I did. I attended a college fair my senior year in high school and spoke to Rich about engineering. I (somewhat) jokingly asked which discipline of engineering required the least amount of calculus to which he responded with a smile "Civil!"

Once enrolled, I often visited Rich, who also happened to be my adviser, to discuss my concerns with grades or what class to take but our conversations always ended with sports, family or other interests we shared.

I'm grateful for all the guidance that Rich provided to me through my college years. In large part to him, I have been blessed with great experiences and opportunities in my career that would not have been possible had we not met at that college fair.

D. JOE OETKEN

B.S. CIVIL ENGINEERING 1996

I will always remember his conversational giggle, his smile and his unwavering care for, and interest in, his students. He holds people accountable for their actions, and he is the first to congratulate you on a success.

In the last year, I visited SDSU with my wife and son for a college visit. We ran across Dr. Reid, and we talked for what seemed like an hour. Before we left Brookings, my son had made his decision to attend SDSU. I can say with confidence that Dr. Reid is one of the reasons Jacob will be a Jackrabbit.

BARBARA (WEHDE) SWENSON

B.S. BIOLOGY AND SPANISH 2011

Rich has a character and personality that is critical yet compassionate, an eye for the big picture and has no shortage of energy or enthusiasm. All combined make him a model example of leadership for students in all stages of their careers, compelling them to explore and succeed in the classroom and translating that to the world.



KONDA FAMILY

STATE YEARS BRING MORE THAN 'A GOOD EDUCATION'

Starting with leading trips to the regional science fair on campus in the mid-1980s to the graduation of their youngest child in 2015, Frank and Dinah Konda of New Effington have become so loyal to South Dakota State University you would think they're alums.

They're not. Frank, originally of Marion, graduated from now-closed Southern State College in Springfield in 1969, Dinah, originally of Java, graduated from Northern State College in Aberdeen in 1972. Both ended up teaching at New Effington in the fall of 1972 and married a year later—Sept. 29, 1973.

From this union were born seven children, four of whom became SDSU graduates, four went into engineering and three are teachers.

The SDSU grads are Travis, Daren and Neal, all civil engineering graduates, and Kama, the youngest and only daughter, whose degree is in speech communications. In addition, two spouses are SDSU grads. Alan and Kerry followed mom's lead and graduated from Northern State. Loren completed the machine tooling program at Lake Area Technical Institute in Watertown.

GRADUATED DEBT FREE

"All seven children, when they walked across that stage, between scholarships, their work and mom and dad helping them, they graduated debt-free," Frank Konda said.

The kids appreciated Frank and Dinah's help, but the help Frank mentioned was not a check to cover tuition and the kids knew not to ask for one. But there were many tangible and intangible touches. One that stood out was in 1999, when the SDSU chapter of the American Society of Civil Engineers won the regional concrete canoe contest in Rapid City.

That meant the team qualified to compete in the national contest in Melbourne, Florida. But, as Frank recalls, the team had

no vehicle or trailer to make such a long trip and no funds for the trip either.

"We bought an older Ford dually with no air conditioning. Travis had an 18-foot car trailer that he hauled wood with. I had salvaged two-by-fours and had some used tin. We built a crate to put on the trailer," Frank Konda said.

"It looked a little rudimentary," admits Travis Konda, who was a graduate student by this time. "Then we get to the national competition and see new pickups pulling manufactured trailers covered with corporate sponsor logos. To be able to compete at that level on sheer ingenuity was a source of pride."

BUILDING CANOE, BUILDING COMMUNITY

Chuck Tiltrum was the faculty adviser. In an interview for the Winter 2000 Impulse, he credits South Dakota work ethic for the team's ability to compete.

Travis Konda agrees and, even though the story didn't finish with a fairy-tale ending—SDSU placed 13th out of 24 teams at nationals—it created a wealth of fun, fond memories and life lessons.

Daren Konda, the second of seven children and concrete canoe team captain, said in the 2000 Impulse article, "It was a lot of fun ... One thing I remember from that trip happened just before the women's sprint. They had to delay the start of the race to let a dolphin pass though. That was neat. I won't forget that."

Daren got involved immediately with the concrete canoe project, but Travis didn't get involved until his fourth year. By then, "Daren was in charge of it. It's a big-time commitment. It was a full-on project. But those skills and associated issues—scheduling, resources, time management—are still every part of every job you're working on," said Travis Konda, now a large structure bridge engineer.

THE KONDA CAPSULE

- Father: Frank Konda – Taught high school biology for 41 ye ars, finishing his career in Sisseton in 2010.
- Mother: Dinah Konda – Stayed at home, raising seven kids, and multitudes of animals and birds on the farm.

In addition to teaching, Frank and Dinah raised chickens, cattle and sheep on their small farm northeast of New Effington. Frank worked as a farmhand during the summer as well as having a small tree service.

CHILDREN:

- Travis Konda: BSCE – May 1998, MSCE – December 2000. Went to Iowa State, Ph.D., 2004 in structural engineering. Principal engineer with HNTB Corp. in Minneapolis.
- Daren Konda: BSCE – December 1999. Works as the facilities engineering manager for the Nebraska Game and Parks Commission.
- Teresa (Kub) Konda –BSCE—December 2001, MSCE – 2003. Works for HDR in Omaha, where she is a senior engineer in the water supply group.

- Loren Konda – Lake Area Technical Institute, Watertown, for machine tooling. Has been turning out parts for all manner of equipment since 2000. Lives on an acreage near Garretson.
- Alan Konda – Attended Northern State University. Teaches health and physical education at Waupaka Middle and High School in Waupaka, Wisconsin.
- Kerry Konda – Attended Northern State University. Teaches speech and debate at Aberdeen Central High School.
- Brittany (Hanson) Konda: Early childhood education (2010). She and Kerry have two boys, Andrew and August.
- Neal Konda: BSCE – December 2010. Works for South Dakota Department of Energy and Natural Resources in Pierre in feedlot permitting.
- Kama (Konda) Varilek: bachelor's and master's in speech communications (2013/2015). Speech and English teacher at Harrisburg High School.

PROVING TEACHER WRONG

He added, “Looking back on this from a lens of more than two decades, it really was a community that was built. Daren is a really strong people person. He has an enormous amount of energy and an ability to engage other people and make sure they feel a part of this.” Ten of them have stayed in contact through the years.

Every two years, they renew their paddling skills by taking standard canoes down a stretch of the Missouri River for a weekend outing.

After earning his bachelor’s degree in 1998, Travis Konda studied under Professor Arden Siegel and received his master’s degree in December 2000. From there, it was to Iowa State for a doctorate in structural engineering. Now he is a principal engineer with HNTB Corp. in Minneapolis, where he has worked since 2005.

Not bad for a guy whose high school math teacher told him he won’t make a good engineer because he wasn’t good at mathematics.

Konda doesn’t argue that assessment, but he made up for it with a work ethic that seems inherited from both sides of his family. By “bearing down hard” his junior and senior years, Konda finished with a 3.6 GPA.

MAKING LIFETIME FRIENDS

But when reflecting on his college years, he said, “I would have drunk more beer and studied less. Not just for the beer, but the importance of the relationship and building that community is worth far more than ‘you got a 98 rather than an 85 on your wastewater test.’”

He also points back to his roommates. “We are still pretty close. There were days people didn’t get along; days you had to apologize. It was all part of a learning experience and growing.”

Teresa (Kub) Konda, Daren’s wife, also thinks of friendships when she thinks of her SDSU days. “The year or so we spent in

graduate school we were a tight-knit group. The four of us went out to eat together, went to plays together. We were working on the same courses, attending classes together, doing homework together.”

FINDING A SPOUSE

Daren wasn’t a part of that group. He earned his bachelor’s degree in December 1999 and moved to Omaha, where he still lives. Teresa earned her bachelor’s degree in December 2001 followed by a master’s in 2003. They married in 2006. It culminated nearly a decade of dating and, of course, involved the concrete canoe.

Teresa, originally of Ipswich, was a freshman and Daren a senior in spring 1998. “I started going to the laboratory to help with concrete canoe construction. We became friends. We were both racing the canoe that year. We would go out to the Bowes Construction lake with other students and became close friends during paddling practice,” she recalls.

Daren adds, “We no more than got back from the regional contest (which SDSU won) and I asked her to go out to a play at SDSU.”

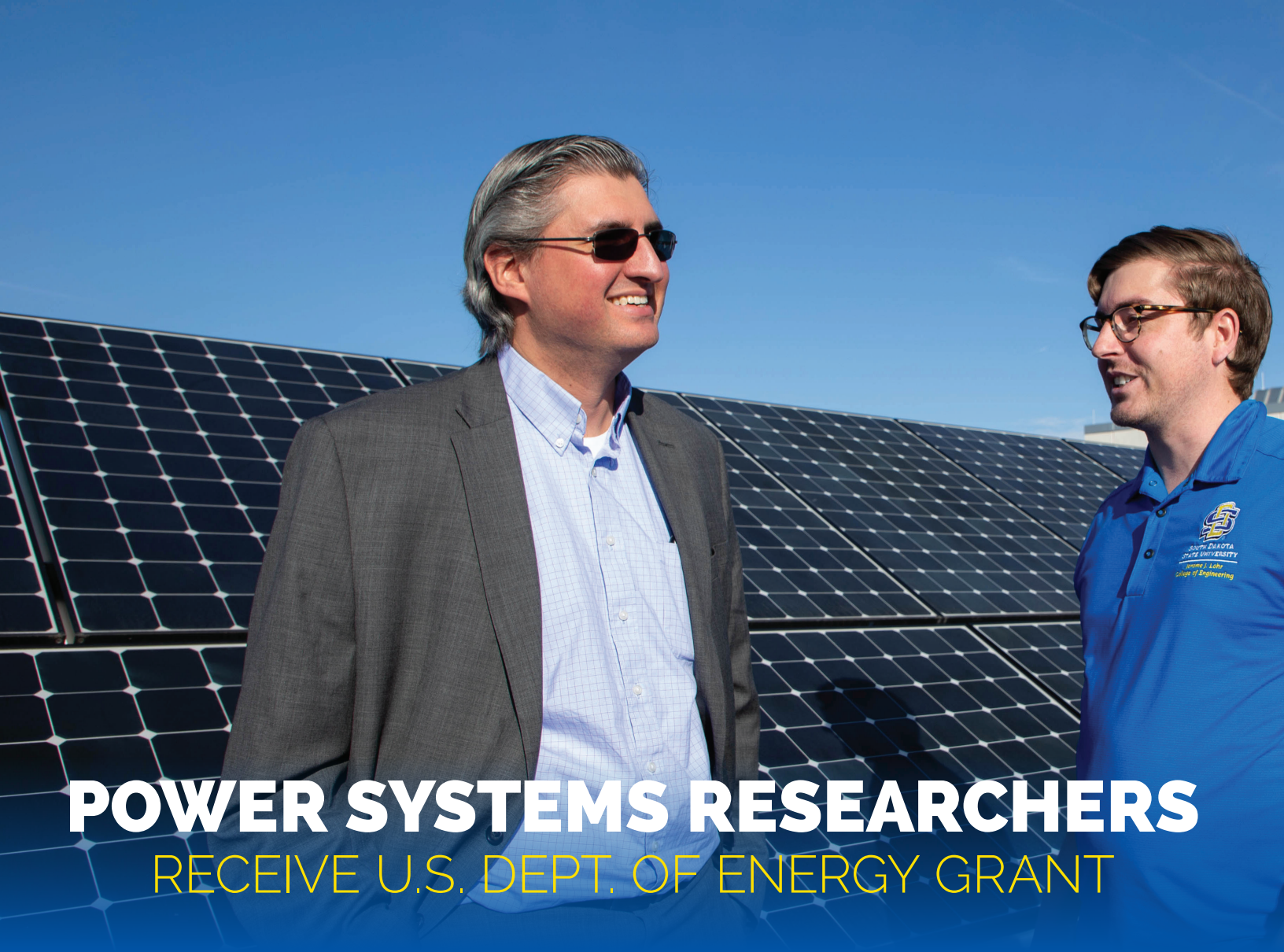
He stretched a four-year program into five principally because of his heavy course load of extracurriculars. In addition to being what Travis called “the all-around ASCE cheerleader,” Daren was a resident assistant, an Admissions Ambassador and one-year participant on the cross country team. In addition, he worked with Travis’ firewood business.

The help that Daren and Teresa received from SDSU moved them to create the Konda Student Leadership Scholarship for a student leader in ASCE. “We were fortunate to get scholarships to attend SDSU and that’s one of the reasons we’ve created a scholarship,” Daren said.

Frank Konda sent his kids to school with this advice: “You’ll get out of it what you put into it.” He adds with certainty, “They got a good education out of State.”

Dave Graves





POWER SYSTEMS RESEARCHERS RECEIVE U.S. DEPT. OF ENERGY GRANT

It's a first for two South Dakota State University power systems researchers.

Associate professor Reinaldo Tonkoski and assistant professor Tim Hansen of the Department of Electrical Engineering and Computer Science are modeling power systems that integrate large amounts of renewable energy sources through their first grant from the U.S. Department of Energy.

"We develop models to study dynamics and energy management so we can ensure the electric grid has good power quality and is reliable and resilient," Tonkoski said. Energy generated by solar panels and wind turbines is variable by nature and interfaces to the electricity grid using power electronic converters.

Tonkoski and Hansen collaborate with researchers from the University of Alaska Fairbanks and the University of Puerto Rico Mayagüez through a two-year, \$3 million DOE Established Program to Simulate Competitive Research Implementation Grant. This EPSCoR project is designed to improve the host institutions' research capabilities thereby increasing their ability to compete for federal funding. In addition, the research supports the DOE's mission of ensuring America's security by addressing its energy challenges.

Of the nine projects that received DOE EPSCoR funding last fall, Hansen said, "Ours is the only project that focuses on power and energy systems." One postdoctoral researcher and two doctoral students also work on the project.

UNIQUE FEATURE OF RENEWABLES

Electric generation and demand on the power system must be equal at all times to maintain a 60-hertz grid frequency. Typical generators, such as steam turbines and even hydroelectric plants, produce electricity using a spinning mass and resist a change in frequency due to the rotational inertia.

"If you have large changes in load, this mass will not let the electric frequency dip too low. This dynamic is well known and everyone knows how to model these traditional electricity generation methods for power systems studies," Hansen said.

Energy from solar, wind and energy storage devices must interface with converters that transform direct current to alternating current. These units are providing similar frequency support electronically, he explained. However, this electronic interface decouples the traditionally generated mechanical energy from the power grid, thus leading to changes in system dynamics.

Through a U.S. Department of Energy grant, associate professor Reinaldo Tonkoski, left, and assistant professor Tim Hansen of the South Dakota State University Department of Electrical Engineering and Computer Science will model power systems that integrate large amounts of renewable energy.



South Dakota State University power systems researchers, associate professor Reinaldo Tonkoski, left, and assistant professor Tim Hansen will use the new OPAL-RT Technologies real-time digital simulator to model how converter-based and traditional-based energy control systems will work together to ensure voltage and frequency stability in the electric grid.



“These converters are relatively new and a lot has been changing in terms of how to control them and how to provide voltage and frequency support to the grid,” Tonkoski said. “All the algorithms are new, and we need to find proper ways to analyze systems with many of these units present.”

“And the algorithms are proprietary, so we do not know what’s going on inside the black box,” Hansen added. Additionally, “current models make it difficult to perform power systems studies for large areas.”

The researchers use statistical modeling techniques to determine how converter-based and traditional-based control systems will work together to ensure voltage and frequency stability in the grid in various scenarios.

APPLYING MODELS TO POWER GRIDS

Each university operates within a different power grid, which puts the researchers in a unique position to test the models using different conditions and types of converter-based generation.

Brookings is part of the Eastern Interconnect, the largest power grid in the continental United States. The SDSU researchers are applying the models to a large grid using the new

OPAL-RT Technologies real-time digital simulator. “It would take a very large change in power to notice any change in the system frequency within such a large power grid,” Hansen explained.

Alaska’s power system utilizes local and regional grids. “Some data centers here (in the continental U.S.) are bigger than the Alaska grid,” he said. The Puerto Rico grid is even smaller.

“Alaska uses both wind and hydroelectric power, while Puerto Rico will use more solar in the long term,” Tonkoski noted. “For each system, the change in load versus change in frequency will be different,” Hansen said.

When responding to major events, such as an earthquake or hurricane, which cause large deviations in system frequency, converter-based electronics are advantageous because the power output can change near instantaneously, Hansen explained. That can help prevent a systemwide blackout.

In the long run, the statistical modeling techniques this multistate research team is developing will help make power systems more resilient when faced with natural disasters, such as Hurricane Maria.

Christie Delfanian

Mechanical engineering students Wade Olson of Omaha, Nebraska, left, and Nick Runge of Sioux Falls work with teammates Matthew Berg of Baldwin, Wisconsin, and Anthony Bachmeier of Aberdeen, who manage the business and promotions side of the NASA drone project.



SENIOR DESIGN TEAM TO BUILD HUMAN-CARRYING DRONE

A team of engineering and business students will build a drone large enough to carry a human for its capstone senior design project through a nearly \$80,000 NASA grant—and support from local donors.

The NASA University Student Research Challenge aims to gather innovative ideas and to inspire young engineers. “NASA wants to address specific topics, one of which is related to innovation in aeronautic transportation,” explained assistant mechanical engineering professor Marco Ciarcià, the senior design group’s project adviser.

The SDSU team proposed building an autonomous air taxi system, which it named the Advanced Transportation through Leading-edge Aerial Systems, or ATLAS. The goal is to make a flying vehicle in which clients set their destination and the taxi takes them there—no pilot needed.

“It’s a very big project,” said team leader Isaac Smithee, a mechanical engineering major from Hutchinson, Minnesota. To claim the full amount of the grant, the ATLAS team used crowdsource funding to raise \$2,590, thanks to 16 private and corporate donors.

Assistant professor Todd Letcher, who teaches the senior design class and also oversees the design team, said, “This is such an incredible opportunity for these students. Never before have we had an \$80,000 senior design project. This is a chance to work on something a lot of people pay attention to and that NASA cares about and is willing to support at a high level.”

BUILDING PROOF OF CONCEPT

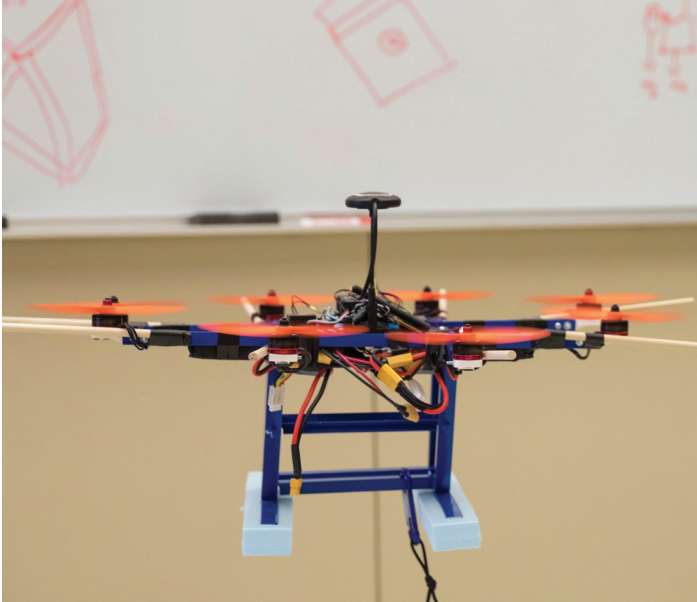
To validate its preliminary design, the seven-member team completed in February a small-scale drone, called the Hummingbird, using off-the-shelf components. Based on experience with this proof-of-concept, the students will then build a large-scale battery-powered drone called the Albatross capable of lifting more than 200 pounds of payload.

“One of the goals of Hummingbird is to test the control system so once we get the bigger drone built, we can essentially move the system over to the Albatross,” said mechanical engineering major Wade Olson. The Omaha, Nebraska, native has been flying remote control airplanes for two years. He and Nick Runge, a mechanical engineering major from Sioux Falls, will be working on the autonomous flight software of the drones.

The team chose a Pixhawk flight control system, because it is cost-effective and a wealth of information is available about the control system. “Pixhawk is also compatible with GPS sensors and has other features that can be added to the system,” added Sterling Berg, an electrical engineering master’s student from De Smet.

“The control system should be self-contained, so we can plug in a computer and run it from there,” Smithee said. In March, they began purchasing parts to assemble the Albatross.

During the first experiments, the students will operate the drone via remote control, but it will eventually be autonomous,



The tethered small-scale drone, the Hummingbird, hovers in midair in the Aerospace Robotic Testbed Laboratory on the third floor of Crothers Engineering Hall. Next, the team members will practice flying the Hummingbird in the Animal Science Pavilion.



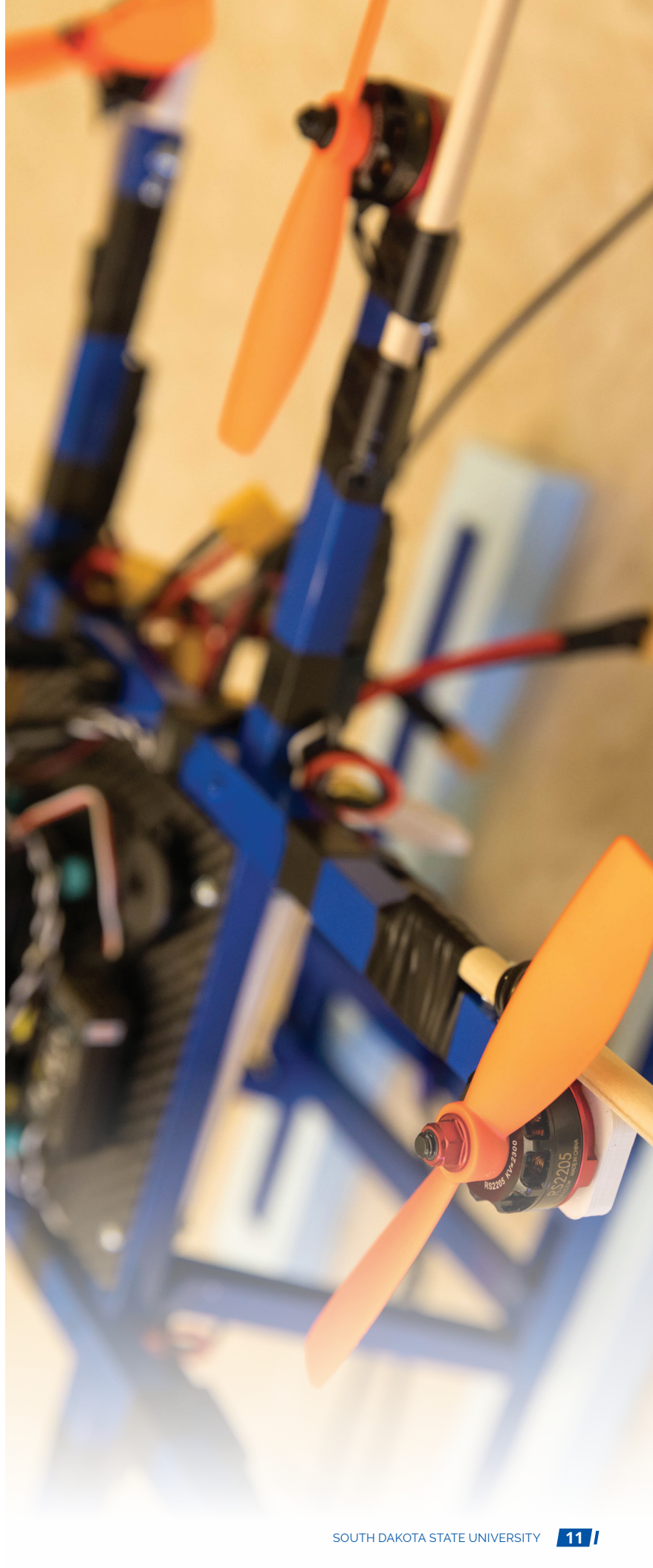
Mechanical engineering majors Nick Runge and Wade Olson, who will be working on the autonomous flight software of the drones, hold the Hummingbird.

Ciarcià said. “The passenger will set the destination, push go and it will fly by itself.”

Other team members are mechanical engineering major Ryan Twedt of Hendricks, Minnesota; Matthew Berg, a business economics and entrepreneurial studies major from Baldwin, Wisconsin; and Anthony Bachmeier, a communication studies, entrepreneurial studies and agricultural business major from Aberdeen.

Berg and Bachmeier will provide updates on the team’s progress through the Facebook page, ATLAS Air Transportation and Twitter account, @ATLAS_AT20 and Instagram ATLAS_AT20.

Christie Delfanian



ELECTRICAL ENGINEERING

NEW DEPARTMENT HEAD NOT NEW TO COLLEGE

When India native Siddharth “Sid” Suryanarayanan stepped into Crothers Engineering Hall for a job interview in late 2019, the electrical engineering researcher and educator felt he was on familiar ground.

He has been connected to campus for several years thanks to collaborative research with assistant professor Timothy Hansen and associate professor Reinaldo Tonkoski.

Effective June 22, Sid, as he prefers to be known, will not only be a collaborator with Hansen and Tonkoski, he also will be the head of their academic unit. Suryanarayanan was selected from among three finalists as the head of the Department of Electrical Engineering and Computer Science. George Hamer has been serving as acting head since Steve Hietpas returned into a faculty role following the 2017-18 school year.

Until June 22, Suryanarayanan is a professor in the Department of Electrical and Computer Engineering at Colorado State University in Fort Collins.

He joined the CSU faculty in August 2010, gained tenure in July 2014 and received early promotion to professor in July 2019. Prior to CSU, Suryanarayanan was an assistant professor at Colorado School of Mines in Golden from January 2008 to August 2010 and an assistant scholar scientist at Florida State University from March 2005 to December 2007.

Suryanarayanan had research positions at Arizona State, where he earned his master’s (2001) and doctorate (2004).

POWER SYSTEM CONNECTION

Suryanarayanan’s background is in electrical power systems engineering. Hansen and Tonkoski share interests in power electronics, the smart grid and power systems. They are collaborating on a Department of Energy study to model power systems that integrate large amounts of renewable energy sources through the power grid. For more, see pages 8-9.

Hansen and Suryanarayanan wrote book chapters in the 2016 publication “Cyber-physical-social systems and constructs in electric power engineering.”

The book is a compendium of the state-of-the-art in an emerging concept that merges computations, electricity grid principles and societal aspects for enabling the next generation of electrical energy infrastructure.

Hansen said he is excited to have Suryanarayanan heading the department because “he thinks the disciplines of electrical engineering, computer engineering and computer science, along with statistics and data science, are poised to be big drivers in the next couple decades of technological innovation, harnessing the data revolution.

“Sid’s background in computer- and data-driven applications to systems engineering is a perfect mesh of these cross-cutting disciplines, and he has the expertise to spearhead department and cross-college efforts to be national leaders in these fields for research and educating the next-generation workforce.”

Suryanarayanan became interested in this position because it provides an opportunity in administration and “I have some strong collaboration with the Lohr College even before I considered applying for this position. Why do this from so far away when I could do this in the same building?”

CHALLENGES FORESEEN

While he intends to keep his research active at SDSU, he notes, “My first responsibility is administering the department. Enrollment and retention of students will take my primary interest.”

Suryanarayanan sees those issues to be the department’s biggest challenge. “The forecasts of a decrease in traditional enrollments in the region, coupled with expectations of budgetary adjustments, will pose a challenge to the department.



New head of the Department of Electrical Engineering and Computer Science
Siddharth Suryanarayanan, left, with Dean Bruce Berdanier.

But I am confident that with collective input from the department faculty, staff and the various stakeholders, we will tide over these challenges.”

Fall 2019 enrollment totals 298 students (electrical engineering, 135; computer science, 163), which is 20% of the college’s enrollment of 1,480 students. A year, earlier those numbers were 152 (electrical) and 201 (computer science) for 23% of the college’s 1,526 students. In fall 2017, the department had 399 undergraduates and 25% of the college’s 1,602 students.

DEPARTMENT RESEARCH A STRENGTH

On the other hand, he sees strengths in having continuously accredited programs—electrical engineering since 1936 and computer science since 2005.

Another strength he identified is the focused areas of research that have great potential for impacting the region and beyond. With 20 years of research experience, Suryanarayanan said, “I can offer support to younger faculty; let them take the reins and I can be a senior personnel, a co-PI (principal investigator) on grants with energy management.”

He said his background in systems engineering—coordinating an array of factors in order to reach an objective—translates well into any research discipline.

Through his research career, Suryanarayanan has generated \$2.1 million in externally funded projects as PI with \$1.7 million of that strictly earmarked to him. For externally funded projects in which Suryanarayanan served as co-PI, he has generated \$1.5 million with \$281,000 of that tagged to him. His work was featured in the National Science Foundation’s Green Revolution video series.

Asked to cite a research project he is particularly proud of, he said, “The next one.” He adds, “I’m very thankful to the National Science Foundation and U.S. Department of Energy and the Office of Naval Research for supporting my research and helping me build a body of knowledge.” Suryanarayanan will bring a couple research projects with him from CSU.

BRINGS FRESH PERSPECTIVE

He also will bring “a fresh leadership perspective of the opportunities for the integration of education and research in electrical engineering and computer science,” Dean Bruce Berdanier said.

“I am especially excited by his knowledge of current trends in electrical and computer engineering and computer science as well as his past research success and his experience in administering a successful campuswide center on wind energy research and education.

“Finally, Dr. Suryanarayanan is recognized internationally and will be a leader for the Lohr College of Engineering in growing our international student engineering community,” Berdanier said.

In a Jan. 31 interview, when Suryanarayanan was here to house shop and make acquaintances, he said, “I’m restless to get here and get started. From what I’ve seen of the community, I’m very happy to know so many people are helpful. I’m a big proponent of the land-grant mission, and I’m excited to start and drive the department’s goals toward that mission.”

He leads a department with 14 faculty members (six computer science/eight electrical engineering) and three support staff.

Dave Graves

SIDBITS

SIDDHARTH SURYANARAYANAN

- Parents are retired college professors in plant sciences.
- Graduated with Bachelor of Engineering degree in the first class with distinction category (highest honor) from Madras University, Chennai, India, (2000).
- Naturalized U.S. citizen.
- Married to Andrea, originally of Cheyenne, Wyoming. They have a 3-year-old-daughter, Prianka.
- Was a research supervisor for current EECS faculty member Tim Hansen when he was at Colorado State in 2012-15.
- Like Hansen, he was a MacDonal Outstanding Teaching Award recipient from IEEE (Institute of Electrical and Electronics Engineers) HKN honor society. Suryanarayanan in 2017, Hansen in 2019.
- Received IEEE Power and Energy Society’s Outstanding Young Engineer Award in 2015.
- Developed five courses while at CSU, including “Grid Integration of Wind Energy Distribution Grids.”
- Has given invited lectures in India, France, United Arab Emirates, Saudi Arabia, China, Japan, Argentina, Brazil, Cyprus and Germany as well as the United States.

SEIZING AN OPPORTUNITY

HAGGAR USES FDA JOB TO LAUNCH ENTREPRENEURIAL CAREER

Sump pump failure could mean a soaked basement carpet and a slimy mess. Failure of an infusion pump could mean death. Failing one time out of a hundred is 1% too many.

The U.S. Food and Drug Administration approves or releases the pumps to market and inspects the companies that produce them. The companies track experience and update the products to ensure reliability.

Bruce Haggar and his company, MedQ Systems Consulting, work with medical device manufacturers to help them set up an efficient and dependable manufacturing processes both before and after FDA inspections. The 1974 engineering physics graduate has been in this line of work since he left graduate school in 1977.

In two years with the Food and Drug Administration, Haggar said he was on the manufacturing floor of nearly every medical device maker in the San Francisco area.

From there he worked for medical device makers in Oregon, Washington, Arizona and California before beginning as an independent consultant in 1992. In 2000, Haggar and a partner formed MedQ Systems, operating out of his Pacific Northwest home. Haggar and Keith Rohrbach never had an employee, but they traveled the globe.

Rohrbach retired a few years ago and Haggar, 67, is semi-retired and living in Brookings, where he moved in July 2018.

RECONNECTING WITH STATE

He became part of the Jerome J. Lohr College of Engineering Dean's Advisory Council in the fall with an eye toward helping biomedical engineering students land internships and finding financial support for engineering majors. He's already done some mentoring of a student group participating in the Brookings Student Business Plan Competition.

He hopes to share his experience with students and support biomedical technology advances at the university. "Designing and marketing a safe and effective medical device is a combination of the design, manufacture, risk management, monitoring the product's use and reacting to it," Haggar said.

An avid sports fan, Haggar has held SDSU football season tickets for six years. As he aged, he decided Brookings would make a good place to retire.

When the Pierre native made his initial career plan, Haggar thought he would be a medical doctor. He was pursuing a master's in electrical engineering with a biomedical emphasis when the FDA was empowered to regulate the manufacture of medical devices. In 1977, the FDA was hiring an engineer in each of its districts.

Haggar decided he wanted an income more than he wanted to pursue medical school.

He filled out a generic government job application, got an interview and received a job offer for the San Francisco position. He also had a job offer from IBM in Rochester, Minnesota. "I really wanted to go to California," Haggar said.

AN INTERNATIONAL EXPERT

That decision played out well. He became an internationally recognized expert in the design process, risk management and quality assurance of medical device manufacturing. "It's hard to find a medical device company I haven't been to. I've worked with many companies in Europe and in China." The total number of companies would be in the hundreds, he said.

"In a typical year, I work with 15 companies. Some jobs are long, some are short," Haggar said.

He estimates that 30% of MedQ's work is with startup companies. Another 30% is with companies that have run afoul with the FDA. The remaining 40% might be advising manufacturers who want to outsource part of their production process or need expertise in assigning risk potential to a product that they're considering producing.

HAS OVERSEEN VIRTUALLY EVERY KIND OF DEVICE

Think of a medical device or instrument and Haggar has probably had a role in it—orthopedic implants, pacemakers, X-ray machines, surgical robots and even the first automatic external defibrillators where he was integral in developing the



Bruce Haggar poses by an magnetic resonance imaging machine at the Brookings Health System. The MRI is one of the many medical devices the SDSU grad has had a role in developing, primarily as a consultant.

algorithms and implementation of the products to the point where they are now on the walls of most public places.

“Those products have saved hundreds of thousands of lives as early research found that victims of cardiac arrest must be defibrillated in minutes,” Haggar said.

He was a vice president with Cardiac Resuscitator Corp. in 1980 when the Portland, Oregon, firm was manufacturing and marketing an early version of the AED to emergency medical technicians. Then he went to work for First Medical Devices Corp. in Bellevue, Washington, which built the first mass-produced AEDs.

One of his more recent accomplishments was coordinating the Medical Device Single Audit Program, which coordinates the inspection program of the FDA and those of other countries. It is now being implemented by third-party companies.

Reflecting on his career, Haggar said, “I think I’ve been lucky to be in the right place at the right time to be both effective and helpful. My background at SDSU was key to the knowledge and skills that I have.”

Dave Graves

DEAN'S ADVISORY COUNCIL UPDATE

In the past year, six people have joined the Dean's Advisory Council while the terms of two members have expired. Below we highlight three individuals.

SUMMER 2019 ADDITIONS

DWAINE CHAPEL '03/'05 executive director of Research Park at SDSU, Brookings

He works with faculty to commercialize research, students to accelerate ideas into startup businesses, and industry to identify research faculty at SDSU. Chapel earned his bachelor's degree from SDSU in business economics as a nontraditional student in December 2003. He completed his master's degree from SDSU in 2005.

He has experience in the construction industry, real estate industry and before joining the Research Park team was involved as the executive director of the Lake Area Improvement Corporation, the economic development organization in Madison.

TIM JENSEN '93 principal, TSP, Sioux Falls

Jensen began his professional career in 1993 after earning his bachelor's degree in electrical engineering. He started as an electrical design engineer at Sencore in Sioux Falls.

He left in August 1996 to join TSP Inc. (formerly Spitznagel) as an electrical engineer-in-training. In 2001, Jensen became a licensed electrical professional engineer in South Dakota. In 2005, he became senior electrical engineer and project manager.

Jensen became an associate principal in 2006 and principal in 2012. In his current position as managing principal of TSP's Sioux Falls, Watertown and Omaha, Neb., offices, he also serves as a member of TSP's operations team.

JERRY LOHR '58, founder of J. Lohr Vineyards & Wines, Paso Robles, California

After receiving his bachelor's in civil engineering, he received a master's degree in civil engineering from Stanford. Following a stint in the U.S. Air Force, Lohr opened a land development and custom homebuilding business, but his passion for farming and appreciation of wine soon led him to take on a new challenge: winegrowing. The result is one of the country's most popular wine brands.

Lohr was co-chair of the university's historic comprehensive fundraising It Starts With State: A Campaign for South Dakota State University, which was completed in 2012. In recognition of his generosity, the College of Engineering was formally renamed the Jerome J. Lohr College on Engineering in October 2013.

Fall additions Tom Boyko and Tracey Oleson will be mentioned in the next edition.

SDSU HONORS ENGINEER WEISS

Larry Weiss' reluctance to take a gamble and become a farmer proved to be a jackpot decision for him and South Dakota commuters.

On April 29 the 1963 graduate of South Dakota State University will be honored as the Distinguished Engineer for the Jerome J. Lohr College of Engineering.

Weiss, 81, of Sioux Falls and a former longtime Pierre resident, becomes the 142nd person to be selected for the honor, which was begun in 1977 by former engineering Dean Junis O. Storry.

The Parkston native retired from the South Dakota Department of Transportation in 2002 as chief engineer, ending a 37-year career.

He also had a 37-year career with the South Dakota National Guard, retiring as a full colonel in 1994. Most of his military career also was spent leading engineering units. After retiring from the Department of Transportation, Weiss spent the next 14 years with the South Dakota Local Transportation Assistance Program, which is overseen by the college.

In addition, he served in a multitude of civic organizations, including four three-year terms on the Pierre City Commission (1997-2009).

"I'm so appreciative and honored to be receiving this award," said Weiss, who moved to Sioux Falls in 2018 with his wife of 55 years, Colleen.

FORSAKING THE FARM ... EVENTUALLY

Weiss was a farm boy who went to State with the idea of returning to the farm. He graduated from Parkston High School in 1957, started college in fall 1959 and earned a degree in ag engineering. He noted he would periodically drop out of school for a quarter to earn enough money to continue his education.

He helped his dad and worked for South Dakota contractors who built a hospital and bridges, which furthered his engineering interest.

Still, when his degree was in hand, Weiss returned to the farm for the next two years. "My dad needed extra help, and I was able to use some of that engineering skill at the farm. But I was not positive at that time if I was going to stay farming for the rest of my life or not. My parents had three quarters of land east of Parkston.

"I would have had to have gone hundreds of thousands of dollars into debt to purchase more land. That was a lot of risk that I wasn't ready to take at that point in my life," he said.

INTERSTATE WORK OPENS OPPORTUNITY

At this time (1965), construction of the interstate highway system was paving the way for good jobs for engineers. He was hired as a DOT project engineer in Chamberlain.



A year later he moved to Pierre as a project engineer, where he did some of the first computer work with the department. "It was a challenge," Weiss admits. But he said the tool was key in figuring out the amount of water that would back up when a milewide flood plain was channeled under a 2,000-foot long bridge.

He worked in Pierre for 10 years and then moved to Sioux Falls, where he served as resident engineer and then as an area engineer.

Weiss arrived in 1976, when 41st Street was being widened from a two-lane road with a borrow ditch to a seven-lane urban street with a concrete surface. "We got a lot of criticism at the time for making it too big, but no one complains today," he said. The street handled 20,000 vehicles per day in the mid-1970s. Now it is up to 36,000, the DOT reports.

PUT I-229 ON FAST TRACK

His next move was back to Pierre in 1990 to serve as chief road design engineer. From 1996 to 2002, he served as chief engineer, also in Pierre.

During that time, he developed the first design build project for the Department of Transportation, which allowed the construction of I-229 in Sioux Falls in two construction seasons rather than the estimated four. Weiss said the Minneapolis designer and the Omaha, Nebraska, contractor worked simultaneously on the project.

For example, while the contractor was driving bridge piling and pouring concrete footings and columns, the designer was finishing specifications for the bridge deck, railing and steel beams.

EXCELS WITH GUARD'S PANAMA PROJECT

The crowning jewel of his military work was serving as chief engineer for a nation-building project in Panama in 1993. He said 500 pieces of equipment were sent by ship or air and temporarily housed on a vacated jungle airstrip that had been used by drug planes under the direction of recently ousted dictator Manuel Noriega.

In six months, dozens of National Guard units, most working in two-week shifts, built 27 kilometers of roadway, six medical clinics and a dozen schools.

He said the South Dakota National Guard undertook the federally funded project because it gave the units a realistic feel for what it would be like if they were called into war. Units had just a few days to prepare paperwork and report to base, then they boarded a plane in Rapid City. Six hours later they were in Panama City.

He remembers one month that meant transitioning from -40 wind chill to 95 degrees. "It feels like entering a blast furnace," Weiss said.

Work there was challenged by termites—"we had to build everything out of concrete and steel," rain—"they receive 90 to 120 inches of annual rainfall and it is torrential," and terrain—"the road was built through mountains with grades up to 30%. After extensive design and grading, the final grades were a maximum of 17%," Weiss said.

Other challenges included timely delivery of parts and calling in more servicemen (from 650 to 900) to get the project back on schedule.

But when the work was completed in May, "it was extremely gratifying to see the looks on the faces of the teachers and children when they walked into the new buildings. What they had before was so primitive. School lunches were cooked in a lean-to. The outdoor toilet was at a higher elevation than their water well."

His military deployment never took him into a war zone. In fact, his scariest experience was in South Dakota.

In 1972, he was a platoon leader when he was called to Rapid City after the June 9-10 downpour that flooded creeks and caused Canyon Lake Dam to fail. His squad's duties included building temporary bridges and digging for bodies in basements that had taken on floodwaters and sediment. There were 238 deaths, including 14 trained professionals.

Weiss thanks the Lord there weren't 239.

There was concern that Sturgis dam would fail. So Weiss' squad built a raft and attached pumps to lower the water level behind the dam.

The plan would work if the pumps kept running. The pumps would keep running if they had fuel. "Pumps had to be refueled in the middle of the night. There was a 3-foot-wide "path to the pumps and a drop-off of 75 feet. I was out there carrying two 5-gallon cans of diesel," Weiss said. Weiss, then age 33, pulled off the refueling without incident.

It was a 10-day assignment Weiss will never forget. He commented, "It was absolute turmoil." Three fellow Guard members died in the rescue effort.

'IT'S ALL ABOUT PEOPLE'

James Keyes, former executive vice president of the Associated General Contractors of South Dakota, said, "Larry Weiss is one of the most outstanding individuals I have ever known." He cited Weiss' intelligence, leadership and ability to work with others.

Throughout his career, Weiss also used his abilities in community service, donating untold hours to numerous organizations. One of the most meaningful to him was an effort in 2009-10 that created a regional warehouse for Feeding South Dakota in Pierre. "Best used by" dated food that grocery stores had been tossing was now feeding the hungry.

The work mirrors the title of a book he wrote in 2002—"It's All About People."

Dave Graves



ENROLLMENTS BY DEGREE (FALL 2019)

UNDERGRADUATE MAJORS (FALL 2019)	FEMALE	MALE	TOTAL	PERCENT*
Ag & Biosystems Engineering	9	49	58	3.92
Civil & Environmental Engineering	27	167	194	13.11
Construction Management	8	132	140	9.46
Construction Technology (associates)	1	2	3	0.20
Computer Science	22	141	163	11.01
Electrical Engineering	9	126	135	9.12
Electronics Engineering Technologies	5	46	51	3.45
General Engineering	2	10	12	0.81
Operations Management	5	55	60	4.05
Mathematics & Statistics**	68	104	172	11.62
Mechanical Engineering	45	407	452	30.54
Manufacturing (associate)	0	1	1	0.07
Data Science	6	33	39	2.64
TOTAL	207	1273	1480	100.00

COMPARED TO	FEMALE	MALE	TOTAL
Total 2018*	216	1310	1526
Total 2017*	205 (12.80%)	1397	1602
Total 2016*	221 (13.38%)	1431	1652
Total 2015*	186 (12.42%)	1311	1497

MASTER OF SCIENCE MAJORS (FALL 2019)	FEMALE	MALE	TOTAL	PERCENT*
Ag & Biosystems Engineering	1	3	4	2.42
Civil & Environmental Engineering	4	22	26	15.76
Computer Science	3	14	17	10.30
Data Science	9	25	34	20.61
Electrical Engineering	5	14	19	11.52
Operations Management	4	3	7	4.24
Mathematics	1	7	8	4.85
Mechanical Engineering	2	24	26	15.76
Master of Engineering (MEng)	3	7	10	6.06
Statistics	5	9	14	8.48
TOTAL	37	128	165	100

COMPARED TO	FEMALE	MALE	TOTAL
Total 2018*	45	171	216
Total 2017*	64	205	269
Total 2016*	74	194	268
Total 2015*	60	183	243

DOCTORAL MAJORS (FALL 2019)	FEMALE	MALE	TOTAL	PERCENT*
Ag/Biosystems/Mechanical Engineering	4	10	14	24.14
Civil & Environmental Engineering	2	7	9	15.52
Computational Science & Statistics	4	9	13	22.41
Electrical Engineering	1	21	22	37.93
TOTAL	11	47	58	100.00

COMPARED TO	FEMALE	MALE	TOTAL
Total 2018*	13	45	58
Total 2017*	14	42	56
Total 2016*	14	42	56
Total 2015*	9	39	48

*Note: There is some duplication because of students that have more than one program in the same college and totals might not equal 100 percent due to rounding.

** Includes Math, Math with Data Science Specialization and Math with Teaching Specialization

DEGREES CONFERRED (2018-19)

UNDERGRADUATES (7-1-18 TO 6-30-19)	FEMALE	MALE	TOTAL
Ag & Biosystems Engineering	2	10	12
Civil Engineering	8	38	46
Construction Management	4	31	35
Computer Science	2	23	25
Data Science	1	2	3
Electrical Engineering	1	13	14
Electronics Engineering Technologies	0	5	5
Mathematics & Statistics	14	13	27
Mechanical Engineering	8	56	64
Operations Management	2	12	14
TOTAL	42	203	245

DOCTORAL MAJORS	FEMALE	MALE	TOTAL
Ag & Biosystems & Mechanical	1	3	4
Civil Engineering	1	1	2
Computational Science/Statistics	2	7	9
Electrical Engineering	0	1	1
TOTAL	4	12	16

MASTER OF SCIENCE MAJORS	FEMALE	MALE	TOTAL
Ag & Biosystems Engineering	2	3	5
Civil Engineering	1	21	22
Computer Science	5	9	14
Data Science	8	21	29
Electrical Engineering	1	9	10
Engineering (MENG)	3	3	6
Mathematics	1	5	6
Mechanical Engineering	3	15	18
Operations Management	2	5	7
Statistics	1	5	6
TOTAL	27	96	123

OTHER STATISTICS

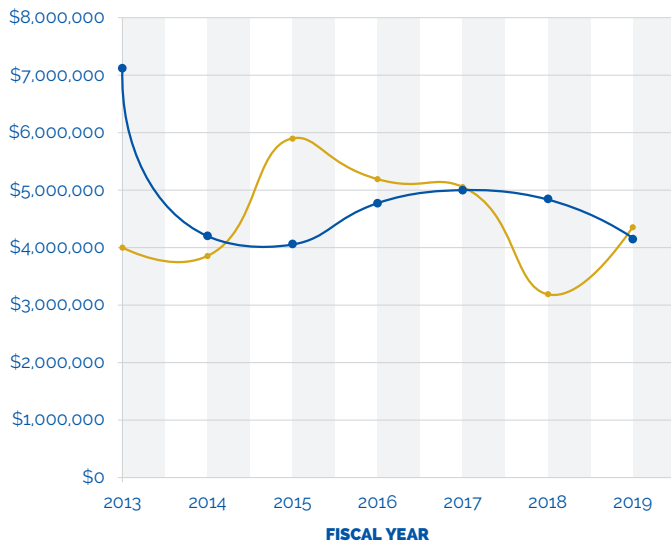
JACKRABBIT GUARANTEE SCHOLARSHIP RECIPIENTS 2019-2020		
First Year	\$575,800	225
Second Year	\$386,000	159
Third Year	\$290,900	108
Fourth Year	\$213,450	81
TOTAL:	\$1,466,150	573

Average award per year: \$2,559

COLLEGE OF ENGINEERING FACILITIES	SQ. FT.
Agricultural Engineering	48,696
Crothers Engineering Hall	89,960
Daktronics Engineering	73,464
Solberg Hall	55,735
Architecture, Mathematics & Engineering Building	62,000
Raven Precision Agriculture Center (<i>under construction</i>)	129,000

COMPARISON OF EXTERNAL AWARDS AND EXPENDITURES

FY2013-FY2019



INTERNATIONAL UNDERGRADUATE STUDENTS		PERCENT CHANGE
Fall 2016	230	28.49%
Fall 2017	213	-7.39%
Fall 2018	186	-12.68%
Fall 2019	160	-13.98%

Dylan Dulas, left, and Kesmond Willert, middle, won the Brookings Student Business Plan Competition Dec. 11 at the Brookings Innovation Center at the Research Park at South Dakota State University. They are pictured with Nick Fickbohm, a business consultant with the Enterprise Institute.



ENGINEERING MEETS ENTREPRENEURSHIP

For some students in the Jerome J. Lohr College of Engineering, business enterprise serves as the perfect complement to their academic pursuits.

The Brookings Student Business Plan Competition is a contest where South Dakota State University students from all disciplines are welcome to showcase their innovative minds and ideas. At the December 2019 competition, the Lohr College of Engineering was well-represented, claiming students from seven of the top eight placing teams.

“As entrepreneurship programs in higher education developed across the country during the past 20 years, so did the connection between entrepreneurship and engineering,” said Craig Silvernagel, an assistant professor of entrepreneurship and innovation management in the Ness School of Management and Economics. “This combination can be highly productive and enhance learning for students in both disciplines. Through collaboration and co-development of projects, engineering students have the chance to explore concepts and develop skills in areas related to venture building and commercialization, and entrepreneurship students have the chance to learn about design, production, and engineering processes and problem-solving.”

For junior mechanical engineering student Dylan Dulas, of Marshall, Minnesota, and partner Kesmond Willert, of

Brookings, the Brookings Student Business Plan Competition was an opportunity to exhibit their portable duck blind.

The pair, both of whom are pursuing entrepreneurial studies minors, created the blind in September 2018 and have focused on making it consumer-ready ever since, winning the 2018 Center for Innovation and Entrepreneurship’s Idea Competition and the 2019 Brookings Economic Development Corporation’s Idea Competition along the way.

“We got the idea for this product through Kesmond’s involvement with MinnDak Outdoors, where we were going to make a DIY video on how to make a portable duck blind,” Dulas explained. “We loved our idea so much that we didn’t post the video and started to perfect it.”

Throughout the process, Dulas and Willert worked with Silvernagel and other faculty in the Ness School of Management and Economics to keep pushing ideas forward and further the development of a business plan as the pair worked to get their small business, Unseen Outdoors, off the ground.

“It involved a good amount of research into the existing market, business structure and also looking at the target customer,” Dulas said. “The experience that we had with the business plan competition was very beneficial—both through the knowledge that we gained through the research as well as the



The second-place team of Evan Fick, Garretson; Anna Fasen, Monticello, Minnesota; and Caleb Bray, Farmington, Minnesota; and Fickbohm.

time and preparation that it takes. The time and effort involved in this process was a good reality check in what it takes to start and operate one's own business."

But Dulas is far from the only Lohr College student to pursue entrepreneurial ventures.

The competition's second-place team, a group of three engineering students, presented a device that measures weight distribution while running to help with form in training. Four engineering majors on the third-place team worked on a remote-controlled snowblower.

"I believe that good ideas can come from any person or program, so I think it's critically important to give students outside the entrepreneurship program a chance to share their ideas for a business," said Tim Weelborg, executive director of the Enterprise Institute. "Competitions like this provide a platform for students to showcase their creativity and demonstrate how they will harness that creativity to solve market problems and create a viable business."

This type of entrepreneurial activity and cooperation between departments has become increasingly common over the past several years, especially since Bruce Berdanier took over as dean in July 2018.

"Dean Bruce Berdanier has provided strong support and encouragement to engineering students wishing to explore the innovation and entrepreneurship potential of their ideas and projects," Silvernagel said.

Berdanier's push for more collaboration between the on-campus entities has been intentional and is likely to persist as employers continue to emphasize extra undergraduate experiences and students develop and foster exceptional ideas.

"We're more purposeful in trying to get more students involved with the business majors and take steps through that process to be more successful in developing business plans and products," Berdanier said. "We tried that more this year and had 24 students join with students from other disciplines and did really well. We're going to keep pushing. It's part of getting the students to see more broadly about what it means to have an engineering education, be more involved in society and to build that innovative or entrepreneurial spirit.

"Companies tell us they know the students get a great education, but when they talk to the students they want to know what did you do that was special, what are you passionate about, what makes you want to rise up and be a leader in this industry," Berdanier continued. "There are a lot of opportunities and a lot of work for students. For the students who want to be leaders, this is part of the process of setting themselves apart from peers."

Landon Dierks



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Faculty Awards



Kurt Bassett, head of the mechanical engineering department since July 2007, received the Harold and Barbara Bailey Award for Excellence in Academic Department Leadership.

The Wilmot native began teaching in the department after earning bachelor's (1981) and master's (1983) degrees in ag engineering. He earned his doctorate in engineering from North Dakota State University in 1995.

Bassett taught courses in mechanics and engineering at SDSU until 1993, when he won a contract to establish and direct a U.S. Department of Energy Industrial Assessment Center at SDSU. In eight years, faculty-supervised student teams completed more than 200 energy assessments and feasibility studies for commercial, industrial and institutional facilities in a five-state region.

In 2001 Bassett joined Johnson Controls Inc. as senior project development engineer. He returned to the SDSU faculty in 2005 and was appointed department head in 2007.

The mechanical engineering department has 16 faculty

members. Its enrollment—452 majors in fall 2019—is the largest in the college. There are another 26 in the master's program and 14 in the joint doctoral program with ag and biosystems. In fiscal year 2019, the department conferred 64 undergraduate degrees and 18 master's degrees.

The mechanical engineering program was one of the five original programs offered when Dakota Agricultural College began classes in 1884-85. Mechanical engineering has been accredited since 1936. Today, its students and faculty work in 15 different labs, primarily in Crothers Engineering Hall and the Architecture, Mathematics and Engineering Building.

Dean Bruce Berdanier called Bassett “a very straightforward, fair and honest communicator and has successfully worked through challenging organizational management logistics not only throughout the COE, but also in our shared spaces with other colleges. Collaboration is rewarding but can only be successful with strong purposeful work of leaders such as Dr. Bassett.

“Dr. Bassett has successfully created a young energetic team of dedicated researchers and teachers in the ME department and works diligently to support and reward them properly for their activities.”



Becky Diischer, a lecturer and online program coordinator in the Department of Mathematics and Statistics, received the university's Excellence in Online Teaching Award.

Diischer, who lives in Wahpeton, North Dakota, has served as an instructor and lecturer for the past 10 years at SDSU and regularly teaches online mathematical reasoning, college algebra and precalculus.

In her time at SDSU, she has also served as college algebra coordinator, presented regularly at math conferences regarding course design that supports student success, particularly for the underprepared students, and has been very involved in course redesign at SDSU that focuses on helping students understand the relevance of mathematics in their own fields.

Department head Kurt Cogswell said Diischer stands out as an online educator because “she works hard at building a connection with each student in her online classes. This allows her to translate the teaching excellence she demonstrates in the classroom setting directly into her online teaching.”

Diischer, who was a Briggs Scholar, earned a bachelor's degree in mathematics from SDSU in 2004 and a master's in math from the University of Iowa in 2007.

When not teaching, Becky enjoys spending time with her husband, Matt, and two cats, Rory and Flynn, as well as running, cooking and being a Minnesota Vikings season ticket holder.



Christine Larson, a professor in mathematics and statistics, was one of two recipients for the university's Edward Patrick Hogan Award for Excellence in Teaching.

She has been teaching at SDSU since 1992. She has had the honor of helping students start their journey in calculus and then finish with courses that prepare them for their own classrooms.

Larson has been involved in the creation of many mathematics education courses through the years to provide a solid mathematics foundation for all future teachers.

Starting in 2001, Larson was among the first teachers

on campus to teach online classes. For many years she also organized a weeklong summer workshop to help high school math teachers to use astronomy to teach algebra.

When students' love of learning combines with her passion for teaching, something wonderful happens, Kurt Cogswell said. And when Larson looks at all the teachers who have graduated from the program, she knows that the department is making a difference in the lives of thousands of students.

Larson, who grew up in Aberdeen, received her undergraduate degree from Augustana University (1985) with an English/mathematics double major, and a minor in computer science. She received her master's (mathematics, 1987) and doctoral degrees (math education) from Montana State University.



Using statistical probability to interpret crime scene evidence has garnered associate professor Christopher Saunders of the Department of Mathematics and Statistics the Outstanding Researcher Award from the Jerome J. Lohr College of Engineering.

While completing his doctorate in statistics at the University of Kentucky in 2006, Saunders was recruited to support the FBI and broader intelligence

community as an Intelligence Community Postdoctoral Research Fellow in pattern recognition and forensic source identification problems related to handwriting.

He spent the next two years at George Mason being trained in machine learning, statistical pattern recognition and the interpretation of forensic evidence.

After the fellowship ended, Saunders continued as an assistant research professor in the document forensics lab at

George Mason and a lead signal processing engineer at MITRE Corporation until coming to South Dakota State in 2012.

Saunders collaborates with forensic research scientists to develop ways to quantify impression, pattern and trace evidence with the majority of his funding for basic research coming from the National Institute of Justice and Oak Ridge Institute for Science and Education. Recently, he received a subaward to support two projects at Massachusetts Institute of Technology's Lincoln Laboratory related to developing methods of using residue from an explosion to trace where the components were manufactured and the quantification of touch DNA samples.

In addition, Saunders has used statistical modeling to predict carp movement so fisheries scientists can remove the invasive species from a lake. He has also developed a method of estimating the availability of solar energy using historical solar irradiance data.

LETCHER RECEIVES YOUNG INVESTIGATOR AWARD



Graduate and undergraduate students have the opportunity to explore the limitless applications of 3D printing, thanks to the work of assistant professor Todd Letcher.

For developing additive manufacturing as a research area in the Department of Mechanical Engineering, Letcher will receive the Jerome J. Lohr College of Engineering's Young Investigator Award at the April 29 Scholarship Banquet.

Letcher came to SDSU in 2012 after completing his doctorate at The Ohio State University, where his research focused on materials characterization and the mechanical behavior of materials related to fatigue.

He purchased his first 3D printer in 2014 through support from the university's Scholarly Excellence Fund. That

purchase has blossomed into an entire laboratory filled with 3D printers and an adjoining room in which his students can fabricate their own filament.

Though he explored 3D printing for biomedical applications, Letcher's research now focuses largely on in-space applications. Two years ago, a team of graduate and undergraduate students built a 3D printer that stands 10 feet tall and operates on a 14-by-21-foot base as part of NASA's 3D-Printed Habitat Challenge. The goal was to design and build shelters for astronauts on Mars.

Through a NASA grant, another senior design team developed and tested innovative materials to use for 3D printing at the International Space Station. The team published a paper in the September 2019 Journal of Composition Science about using basalt, which can be mined on Mars, as one of the components in the feedstock for in-space manufacturing applications.

LINDA WENDT

MATH DEPARTMENT SECRETARY CALCULATES RETIREMENT



After more than 40 years in the State of South Dakota system and 36 years at SDSU, math department secretary Linda Wendt said the numbers all add up to retirement.

Wendt's final day in the Department of Mathematics and Statistics will be June 21. She worked two months at the Print Lab and transferred to the math department in September 1984, working in a dark basement office in

Harding Hall. She retires from a well-lit, second-floor office in the 5-year-old Architecture, Mathematics and Engineering Building, which affords her a nice view of the south end of campus.

The process of doing her job has changed just as radically. She remembers that while typing faculty members' exams on mimeograph paper, she would have to switch the type ball on the electric typewriter to one that included the Pi symbol and other math characters.

She also remembers when class schedules were done by hand and posted outside the office. For many of the classes, the faculty member was simply listed as staff. One year, a young student was looking at the list and came into the office to ask to see Professor Staff. Wendt kept her composure until the student left.

Another year, Wendt got a call from a crying student who was upset that she couldn't find the math building to turn in her homework. The caller was sure she was close to the right place, which she said was building E57 and gave a description of herself.

Wendt went outside Harding Hall to look for the student and asked passing students if they had seen anyone matching the description she had been given. When that proved fruitless, Wendt called the University Police Department, which was able to deduce that the caller had Googled the other SDSU—San Diego State University.

No word if she ever got her assignment turned in.

'ENJOY HELPING'

The fact that Wendt would go outside and look for a student in distress reflects her character.

She said she particularly enjoys the start of school, when new students arrive with questions. "I enjoy helping them," Wendt said. "I don't have any time to get bored. Each day brings something new." As the sole secretarial support staff person for 40 faculty members and graduate teaching assistants, she doesn't lack for work, but rather than it being a burden, Wendt said, "I enjoy the faculty. They're very helpful."

It is a reciprocal relationship.

Professor Donna Flint, who has worked with Wendt since 1999, said, "Not only does she care about making sure we have

everything we need to do our jobs well, but she cares about us personally.

"When I fell and dislocated my shoulder, she was at my house that afternoon with a care package. She asks about our kids, a project we're working on at home, and our health and happiness.

"Whenever we need help with a conference or a special event, she sets aside whatever she is doing to help. Linda keeps Pi Day running every year, giving up her time and her workspace so the students have a fun day of celebrating and eating pie. She never complains about helping us with whatever we need, whether it's to fix the copier, fill out an out-of-state travel request or to find five sheets of green cardstock for a special project.

"She always treats our needs as if they are important to her."

VETERAN SECRETARIAL STAFF TOTALS 205 YEARS

Wendt is equally complimentary of her bosses. She has only had two: Kenneth Yocom, from her whirlwind start in September 1984 to 1991; and Kurt Cogswell from July 2004 to the present.

While there are many things Wendt will miss about SDSU, she won't miss completing the annual performance evaluations, paying for parking or working with the Banner bookkeeping system used by the schools in the state Board of Regents system.

She will miss the camaraderie she has had with fellow secretaries in the college through the years.

The careers of Barb Dyer and LaVonne Reichers (dean's office), Diane Marsh (civil), Susan Goens (ag engineering), Jane Boggs (mechanical), Sally Krueger (physics) and Wendt (math) total 205 years. Only Boggs and Krueger are still adding to the tally.

"We were a very close-knit group," Wendt said. "Every summer the dean allowed us to have an educational retreat day. This went on for a number of years. We toured the wind turbines near Lake Benton and went to Schwan's (in Marshall, Minnesota). Another time we went to the Mellette House in Watertown. We went to Laura Ingalls Wilder's house in De Smet.

She doesn't have a lot of travel planned after retirement, mostly quilting in the winter and gardening in the summer.

However, she does plan to travel to Baraboo, Wisconsin, where a daughter, Stacy Parsons, is expecting her second child in May. Wendt also will plan a side trip through Chanhassen, Minnesota, where her other daughter, Jody Wendt, lives.

Linda Wendt's husband, Terry, a mechanic at the SDSU motor pool, isn't ready for a second retirement. He already retired once, in 2007, when he ended a 27-year career with the South Dakota Army National Guard, where he also was a mechanic.

Dave Graves

STRATEGIC PLAN

DEFINES HOW THE COLLEGE WILL LOOK IN THE FUTURE

With the vision of becoming a nationally recognized, regionally relevant, student-centered, land-grant college, the Jerome J. Lohr College of Engineering has developed an integrated long-range plan for building the future at SDSU called the Philanthropy Placemat, on pages 26-27. This plan not only depicts the vision but also the strategies and resources and measurable key performance indicators to get there over the next five years.

In the 2018-19 academic year the departments each prepared a crosswalk to Imagine 2023, the university's strategic plan. A collegewide leadership workshop was held at the end of the spring 2019 semester for all of the department heads to discuss and summarize the plans developed by their departments and show how they fulfilled the goals of Imagine 2023.

After the discussion of all of the crosswalks and resources needed by the departments to accomplish those plans, the results were grouped into similar initiatives based on the societal leading-edge drivers that they intended to address. Those three delineated college initiatives were:

- the fourth industrial revolution;
- resilience for our communities and the environment; and
- building tomorrow's leaders and the economy.

These initiatives became the defining decision ladders for accomplishing the strategies in the philanthropy placemat.

"There is no silver bullet for how all of this will be accomplished. We are pursuing a lot of different approaches that are all integrated in our minds for how they support teaching, research and engineering extension," said Dean Bruce Berdanier. "A lot of what we are doing, like engaging companies and alumni, is trying to help them identify how they want to impact the vision of the university in a high-level way and how they specifically want to impact the Jerome J. Lohr College of Engineering.

"It's been amazing to me how engaged our companies and alumni are. They want to help but are looking for some guidance on what they can do and they want to see that we have a plan that we are following," he continued. "The philanthropy placemat provides alternative resource needs like the high-impact team center, funding scholarships or developing endowments for graduate researchers and professors so they can do more research."

The colored philanthropy placemat graphic was created to allow supporters to see the steps the college was taking to reach its goals and what resources were needed to accomplish those. Each initiative is presented in a decision ladder format starting with needed resources on the bottom rung. As a placemat user climbs the decision ladder through the key performance indicators, leading-edge drivers and strategies that the college is employing, one can see how the college's vision will be accomplished.

"It's a way to guide people through the things they can support. We're going to be asking people to support the resources in the upcoming capital campaign and each step up the ladder explains why a resource is needed or important," Berdanier said. "If we're going to be a nationally recognized, regionally relevant, student-centered, land-grant college, how do we do it? We show the steps in this plan on how we are going to accomplish that vision."

Not only is the college looking to develop the future workforce but it also wants to provide the students opportunities to be leaders and develop a global consciousness.

"When we talk with employers and the industry leaders, they talk a lot about how we have great, technically educated students but we need to help students develop strong global consciousness to understand the impacts of their work and how those impacts affect society throughout the world," Berdanier said. "We're really trying to differentiate ourselves with the work we're doing.

"When I talked to members of the Dean's Advisory Council and showed this placemat to a few firms, they said it was meaningful and shows we took the time to develop a thoughtful plan of the initiatives we want to accomplish and the resources needed and how we're going to go about accomplishing those," he continued.

Matt Schmidt

ORDER OF ENGINEER

The 50th anniversary of the Order of the Engineer takes place in 2020.

SDSU welcomes Michael J. Yaszemski, M.D., Ph.D., Mayo Clinic orthopedic surgeon and researcher, to campus at noon May 9 for a luncheon banquet followed by a ring ceremony.

Please visit
www.sdstate.edu/jerome-j-lohr-engineering
for details.



JEROME J. LOHR COLLEGE

“BUILDING THE FUTURE”

Vision	Nationally Recognized, Regionally Relevant					
Strategies	Meet employer demand for talented graduates with global perspective		Provide lifelong engineering, technology and management development for graduates and regional workforce		Strengthen the quality of financial support for undergraduate and graduate students	
Initiatives	4th Industrial Revolution			Resilience for the 21st Century and the 4th Industrial Revolution		
Leading Edge Drivers	Applied AI, ML, Data Analytics		Cyber Security for Food, Water, Energy		Automated Heavy Construction	
	Additive Manufacturing (3D Printing)		IOT, Sensors		Robust Energy Production/Grid	
Key Performance Indicators	Defined PhD in Mechanical Engineering		Endowed Professor of Practice in Mechanical Engineering		Defined PhD in Computer Science	
	Endowed Graduate Fellows		Endowed Professor in Math & DS		Research Release Time for New Faculty	
Resources Needed	<ul style="list-style-type: none"> • Faculty Endowments • Graduate Fellows Endowments • Faculty Start-up Research Funding • Research Facilities • Research Database Resources 			<ul style="list-style-type: none"> • Faculty Endowments • Graduate Fellows Endowments • Environmental Engineering • K-12 Workshop Funding • STEM Day at SDSU for M 		

COLLEGE OF ENGINEERING

“THE FUTURE AT SDSU”

Relevant, Student Centered, Land-Grant College

How Will We
Get There?”

Recruit and retain
great students and
great faculty

Accelerate creation
of new knowledge
through increased
research expenditures

Create an environment
of collaboration and
entrepreneurship
through public/private
partnerships

For our Communities
and the Environment

Building Tomorrow's Leaders and the Economy

Transportation/
Structures

K-12 Outreach

Applied Research

Workforce Development

Precision Agriculture

Engineering
Education

Experiential Learning

Culture of inclusion
and innovation

Endowed Professor in
Agriculture and Bio-
systems Engineering

Defined PhD in
Agriculture and Bio-
Systems

Bio Processing
Laboratory,
Curriculum, Faculty

Value Added Certification
in Global Engineering for
Undergraduates

Endowed Graduate
Fellows

Endowed Leader in
Engineering Education

Undergraduate
Environmental
Experimental
Laboratory

Scholarships for
Underrepresented
Students

National Recognition/
Distinction in High
Impact Activities - Team
Competitions

Doubling of COE
Undergraduate
Scholarships

STEM Experiences

Creation of Unique Public/Private Innovative Ecosystem/Center for
Students/Professors/Community/Industry/Start-Ups

Commitments

Building Undergraduate Laboratory
for Engineering
Middle School Students

- Bio-Processing Pilot Plant Facility Funding
- Engineering Team Innovation Center Funding
- Undergraduate Scholarships
- Graduate Fellows Endowments
- Endowed Program & Director of Global Engineering

DEAN'S CLUB

FROM JAN. 1 TO DEC. 31, 2019

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 will receive invitations to special college and university functions and updates from the dean.

500-999

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Vincent J. and Myla I. Alsaker
Kenneth H. and Marilyn C. Andersen
Anonymous
Ronald C. Backer
Mark N. Baltzer
Jonathan K. Bareng
Kurt D. and Susan D. Bassett
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McLaury Engineering Inc.

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Jo Etta D. Younger
Wade A. and Rebecca C. Ziegeldorf
Thomas W. and Lynne Zimmer

1,000+

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3M Foundation and Matching Gifts
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Francis M. and Beverly A. Blaze
Gary L. Bliss
Lori Bocklund
Jerome C. and Nina F. Borgen
Gary I. and Patty A. Braaksma
Theresa E. Brandner
Carey L. Bretsch
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Steve W. and Jean Brockmueller
Brookings Municipal Utilities
Brosz Engineering Inc.
Jon R. and Wendy A. Brown
Trent and Nicole Bruce
Michael A. Bucher
Tim H. and Suzette R. Burckhard
Burns and McDonnell
Robert W. and Linnell Busby
Ronald J. Bymers
Edward L. and Judy Cannon
Laurie A. Carrette Zook
Dwayne and Gayle Chapel
Daniel and Tongsai Chase
David A. and Mary Jo Christensen
Helmer D. Christenson
David E. and Barbara A. Christianson
Tom S. and Lisa R. Christjans

Richard A. and Eleanor J. Coddington
Kurt D. and Mary E. Cogswell Daktronics Inc.
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Glenn DeGroot
Arlo B. and Barbara DeKraai
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Cheri A. DeSmet
Jason L. and Jodi L. Devine
DGR Engineering
Curtis D. Dieren
Scott A. Dooley
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Burdette H. Dugdale
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Eastern Chapter South Dakota Engineering Society
Errol P. EerNisse and Sonja Chesley
Robert K. and Judith L. Egan
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Virgil G. and Georgan E. Ellerbruch
Dan W. and Keely L. Elsasser
Thomas D. and Cynthia A. Elverson
Engineering Technical Services
Stephen M. Everson
ExxonMobil Foundation
Falcon Plastics Inc.
Mickiel P. and Betty F. Fedde
Adolph and Erika Fejfar
Joseph M. Fergen
Andre J. and Mary Ann Fischbach
David M. and Shelley R. Frazee
Alfred and Heidi M. Furth
William L. Gamble
Jerome J. and Olimpia Gaspar
GE Foundation
Glenn S. and Janice C. Gehring
Dale A. and Julie A. Goos
Graco Foundation
Great Northern Environmental
Seth M. and Kimberley Greenwood
Richard L. Gunderson
Philip L. and Kristen J. Gundvaldson
Justin C. and Jallyn Guthmiller
Bruce G. Haggard
Thomas P. Hamlin
Kurt L. and Dori Hansen
Seth T. and Ann M. Hansen
Sharon Hansen
Michael R. Harms
Wayne R. and Karla K. Haug
HDR Engineering Inc.
Michael J. Headley
Heartland Consumers Power District
Jerome D. Heeren
Ronald C. and Margaret J. Hegge
Allen D. and Roxanne Heiden
Michael R. Heier
Steven F. and Heather K. Heil
James A. and Sandra L. Hembd
Henry Carlson Construction LLC
Roxy Hess
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Wallace J. Hoff Jr.
Larry G. and Darlane J. Hoffman
Hormel Foods Corporation
Scot L. and Mary B. Hoscheid
Warren G. and Denise G. Hovland
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Jeffrey L. Ihnen
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ISG
Eugene Iverson
Roy L. Jackson
Dale A. and Diane Jans
Ronald R. Jarrett
Bruce A. and Debra J. Jennings
Deloris E. Jensen
David J. and Norma M. Johnson
Dean H. Johnson
Peter S. Johnson
Thomas G. and DeeDee Josten
Edward E. and Linda L. Kamolz
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Daniel R. and Nancy K. Kenyon
James F. Kirby
Shirley F. Klosterbuer
Audrey Knofczynski
John A. and Leah L. Knofczynski
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Matthew J. and Melissa Kurtenbach
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David L. and LaVonne I. Kurtz
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Ronald J. and Bettie LaVallee
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Lyle P. and Melissa S. Mangan
James (Jim) L. Mann
Ellie E. Marshman
Gene A. Marten
Richard J. and Mary P. Mattern
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Troy W. and Gwen Metzger
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Midwestern Mechanical Inc.
Brian S. Miller
Tanya L. and Timothy D. Miller
Joy E. and John H. Mills
Mills Construction Inc.
Minnesota Power
Missouri River Energy Services
Mitchell Manufacturing LLC
Kevin L. Moe
Susan L. Moe and Vaughn K. Jensen
James B. and Dorothy A. Morgan
James J. and Irene Mullen
Barbara A. Murphy
Sharon D. Nagelhout
Andrew J. Natzel
Jeffrey L. and Trudiann Nelson
Robert L. and Karen Nelson
Jon D. and Julie K. Ness
Daniel N. and Sarah E. Newman
Peter W. Neyhart
Gene A. Ninnemann
Gordon D. Niva and Susan A. Lahr
Glenn Nordmark
Northrop Grumman Foundation
NorthWestern Energy
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Sheri Obr
Neil O. Ohman
Omnitech
Randall C. and Sharon K. Ostraat
Otter Tail Power Company
Steven C. and Kathy F. Otterby
Arlen D. Ottman
John F. and Linda L. Ourada
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P & M Steel Company
Ed A. Parkhurst
Charles W. Patterson
Roger D. and Karen Y. Pavlis
Darren D. Peterson
Raymond C. and Rose T. Peterson
Richard A. Phillips
Bryce J. Pickart and Jayne C. Davis-Pickart
Rodney D. and Lisa K. Pierson
POET
Steve Prairie
Dieter W. Proehl
Puetz Corporation
Robert J. Purcell
Janice E. Quenzer
Daniel L. Raap and Julie K. Forster
James R. and Elizabeth A. Rasmussen
Mark W. and Katie K. Rau
Drew W. Reckmeyer
Wanda K. Reder
Kathy K. and Richard A. Reid
RFA Engineering
Gerhard W. Richter
Jon A. and Cheryl K. Rippe
Fred J. and Ardyne M. Rittershaus
Leslie Roberts
Michael L. and Nancy A. Roberts
Rockwell Collins Charitable Corporation
Dwayne A. and Helen L. Rollag
Edward J. and Roseann R. Roman
Kenneth A. and Mary Margaret Rowen
Vivian E. Ruch
Stephen C. and Karen Rudd
Ronald Rust and Judith Kozacik
James P. Samis
Haifa R. Samra and Nadim Wehbe
Duane E. and Phyllis Sander
Vernon R. and Ruth A. Schaefer
Robert J. Schrag
Donald H. Schroeder
Brian A. Schuelke
Robert H. Schulte
Ronald D. and Jeanne Schultz
Navinchandra N. Shetti
Gene M. Sieve
Arden B. and Lavonne K. Sigl
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Ernest R. Smith and Jane M. McKee Smith
Lyle D. and Donna M. Solem
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South Dakota Water and Wastewater Association
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Wyatt K. Stahl
Gerald A. Stangl
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Wallace R. Stern
Dale M. Stevens
Tyler J. and Joni M. Stowater
Wayne A. and Wendy S. Stowsand
William J. Strandell
Noel E. and Lois M. Stratmoen
Oren G. Strom
Ben G. and Jennifer M. Studer
Duane W. and Gail Sudman
Harvey R. and Harriet Svec
Jerry P. and Mary Pat Sweetman
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GIGA



HIGH-IMPACT TEAM CENTER COULD BE COLLEGE'S NEXT FACILITY

The Jerome J. Lohr College of Engineering has seen a number of changes in facilities recently. And, if everything goes as planned, an additional facility will be joining the college. The High-Impact Team Center would be built at the Research Park at South Dakota State University. The goal is to have the center open for the fall 2021 semester but that depends on fundraising.

Plans are being developed and the college will have approximately 15,000 square feet for student work areas. The space would be leased from the Research Park.

“It’s about the concept of power of place. We’re developing an ecosystem,” said Dean Bruce Berdanier, who noted the college looked at remodeling the Agricultural Engineering Building but that site would not provide everything he and others were looking to add. “We wouldn’t have had the opportunity to be right there with all of those companies, with the professors and their startup companies and with the applied research going on out there. I just know as this center grows, we’ll be moving some of our senior design projects out there as they’ll be working with companies there. These efforts create a vibrant ecosystem of university, industry, innovators and the community.”

Berdanier and Tom Becker, the SDSU Foundation’s development director for the college, will be raising money for the HIT Center. The center will provide a boost to the college’s already successful student competition teams.

“I remember when Lew (Brown, former dean) had two of the leaders of the national champion human-powered vehicle team give an overview of what they did and how they did it to the Dean’s Advisory Council,” Becker said. “I remember the members sitting there with their mouths open and some saying, ‘Wow, this is exactly what we want in our future employees.’ There are a lot of reasons to find ways to let this creativity, energy and enthusiasm flourish.”

Before returning to SDSU, Berdanier was working on a similar idea at Fairfield University.

“I knew of the benefits of such a space and was trying to make it happen. However, we are way beyond where I was in five years in Connecticut—it’s gone so fast,” Berdanier said. “I think it’s due to the efforts made by Lew and Dwaine (Chapel, executive director of the Research Park) and a few others on the strategic plan for the college and the Research Park.”

“During the interview process, the college was starting to come alive with the high-impact activity teams and I was asked how we were going to build on that. This center is one way,” he continued. “The center and those teams will build engagement, enrollment and retention but more importantly, companies want to see students’ passions for engineering. We’re looking to build on that concept with this center.”



The HIT Center provides additional space to the Architecture, Mathematics and Engineering Building’s first-floor laboratory space. Currently, student teams are unable to leave projects and return to work on them at another time.

“The HIT Center will offer students the opportunity to work based on their schedule,” Becker said.

The HIT Center includes a mezzanine level that overlooks the workspace. The Research Park is looking to have a café in one area as well as other tenants in the overall building. Some of those tenants could be college faculty members involved with their startup firms.

The HIT Center’s plans include overhead cranes and large, overhead doors to allow easy access for equipment and other materials.

“It’s a new model in private/public partnership—involving private equity, investment in and by the Research Park,” Berdanier said. “It’s an example of how the Research Park at South Dakota State University works to bring community, industry and university together for everyone’s benefit.”

Chapel said the Research Park could be looked at as the focal point for the community, industry and SDSU.

“We tie things together,” Chapel said. “We provide opportunities for students they might not otherwise have had,

provide access to industry that students and faculty might not have had and vice versa. We’re the place to do that. The Research Park is really a power of place.”

That place is needed, according to Berdanier.

“We need our students to work on companies’ real-world projects in real-world constraints. That not only helps the students learn and learn about their future career but also helps companies that want to engage with us, want our students to work for them, gain access to faculty and do joint research.”

A key factor will be seeing how students use the HIT Center.

“While it’s designed for work, there will also be a hangout space, which creates a different feel, more points of interaction, accidental interactions,” Becker said. “Getting students to the Research Park is crucial to its vision. If students aren’t there, the companies that might locate there are less likely to do so. The students help create that energy everyone wants to be part of.”

Matt Schmidt

IN THE FLOW

RESEARCH TAKING OFF FOR NEW ME FACULTY MEMBER

Applying fluid dynamics to health care, assistant professor Saikat Basu is establishing a research team in the mechanical engineering department.

Basu, only 34, has just begun his second year at SDSU after having completed postdoctoral research positions at Okinawa Institute of Science and Technology in Japan (2014 - 2016) and the University of North Carolina Medical School in Chapel Hill (2016-18). He joined the college in January 2019.

His work has gained high praise.

In 2018, he received the Fluid Dynamics Research Prize from the Japan Society of Fluid Mechanics for his work on interfacial mechanics. Basu developed a mathematical model explaining when a falling drop of water would bounce off a soapy film surface.

This January, the Kolkata, India, native received an early career award from the Non-Resident Indian Welfare Society of India. While it is a prestigious award, Basu said he chooses not to put his focus there.

Instead, he is working to grow the size of his research group at South Dakota State, which, he said, has an impressive group of undergraduate students.

Basu has one senior working on a project that develops computational models of respiratory drug delivery. Eventually, he would like to have two or three graduate students in his research group and expand the current collaboration he now has with universities like Cornell, the University of Illinois and the University of North Carolina.

PURSUING UNIQUE RESEARCH AREA

When Basu talks flow dynamics, he is referring to air flow in the nasal passages, pharynx and esophagus and how topical drug delivery can be improved.

His ongoing research, in collaboration with the UNC Medical School, has measured patients' respiratory airflow before and after three types of nasal surgeries and compared that to their nasal structure to see what type of surgery would be most advantageous. It's a relatively new type of research.

"This type of collaborative projects between engineering science and medical science wasn't possible before. Previously, the computerized computational ability didn't exist for complex anatomic systems. Only three or four other groups in the U.S. are studying problems such as this," Basu said.

He also is using computer modeling to determine ideal drug particle size for throat tumors and has plans to expand his previous four-patient study.

CAREER GUIDED BY A LITTLE LUCK

While Basu always wanted to be a professor in some discipline of engineering, he didn't always have a clear idea on his research interests.

"In high school my love was mathematics, but I found the most satisfying use of that love was to apply that knowledge to people directly around me. The biomedical field is one of the hot topics

right now and for the next 30 to 40 years, biomedical engineering is going to be one of the key areas engineers are going to work on," he said.

After his stint with theoretical fluid mechanics during his Ph.D. days at Virginia Tech, Basu took a postdoctoral position in Japan, where he focused on experimental fluid mechanics. It didn't turn out to be a good match for his interests.

But while in Boston for a 2015 conference, a colleague told him about a potential position at the University of North Carolina's Medical School. Basu found that position had just been filled, but the faculty member suggested he contact another faculty member.

"I emailed that faculty member at 11 p.m. She responded, 'Why don't you give me a presentation tomorrow?' She liked what I did and I was back there in two months." A bit of luck, Basu said. And doubly beneficial because his then-girlfriend and current wife, Brittany, was working as a chemical engineer in the Raleigh-Durham area.

He also found a perfect match for his skill set—computational modeling of fluid dynamics in the biomedical field.

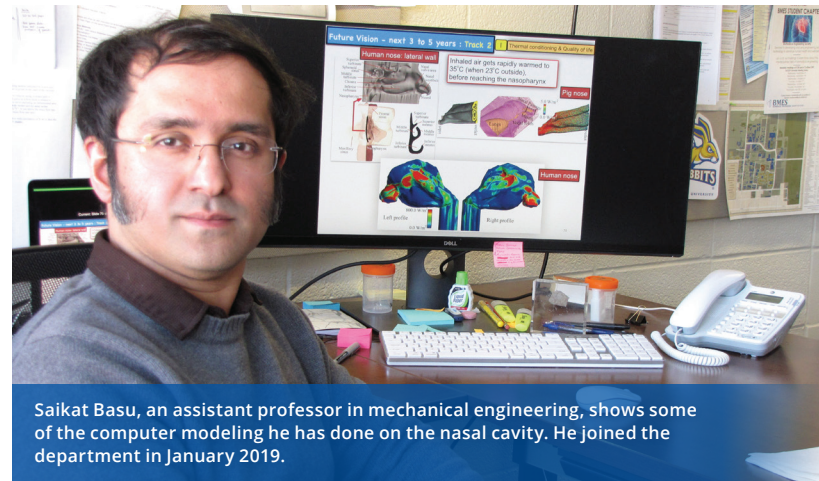
SDSU—'A BETTER OPPORTUNITY'

When his postdoctoral time was up, he also said he found a good match at South Dakota State.

"I had been applying for tenure-track positions throughout the country. I had an offer here and one in India. This seemed like a better opportunity. In the long scheme of things, we are trying to improve and go to the next level," noting the pursuit of a doctoral program in mechanical engineering. "I like the smaller department, the quality of undergraduate students is really high and I have a colleague at Sanford Health. Collaboration is critical in my research," Basu said.

The decision also was popular with his in-laws. They are a northeast Iowa farm family who now have a 16-month-old granddaughter (Uma Elizabeth Basu) much closer than she would have been otherwise; albeit that does put Uma a bit far from her other grandparents in India.

Dave Graves



Saikat Basu, an assistant professor in mechanical engineering, shows some of the computer modeling he has done on the nasal cavity. He joined the department in January 2019.

HANKS OVERSEES AM&E PRODUCTION LAB

Tyler Hanks has just marked his anniversary as lab coordinator in the Architecture, Mathematics and Engineering Building.

Hanks doesn't have anything to do with math labs but the first-floor lab in the 5-year-old building does serve students in mechanical engineering, construction management and architecture and occasional School of Design projects. "We can see 200 unique individuals working here in a semester," said Hanks, who began his job in late March 2019.

"This semester there is a lot of focus on senior design projects and student clubs such as Formula SAE racing, Baja buggy racing and the human-powered vehicle. In the fall semester, there is a mechanical engineering lab in which the combined sections total more than 100 students," Hanks said.

The lab is open 8 a.m. to 8 p.m. Monday-Thursday and 8 a.m. to 5 p.m. Fridays and during breaks.

Within the 12,000-square-foot lab there is a main fabrication area with lathes and mills, a wood shop, a hot fabrication area for welding and metal cutting, and a digital prototyping fabrication room with numerical control machines for automated machining.

Hanks' job is to find ways to make the lab safer and more efficient, and to teach students how to use the tools and machines safely. He is assisted by a lab manager and graduate assistants during class labs.

Hanks said he enjoys "seeing the students develop over time, seeing them come back and apply their knowledge to the projects they're working on."

The biggest challenge has been "the learning curve, learning to operate some of the machines as well as adjusting to an educational environment, where the focus is more about learning and less about efficiency and making money." Hanks came to Brookings from Auburn, Washington, where he was general manager for Red-Head Steering Gears Inc.

Originally from Enumclaw in western Washington, Hanks holds an associate degree from Green River College in Auburn (2012). He plans to pursue a degree in operations management while working at SDSU.

His wife, Bridget, is a Rapid City native.

Dave Graves





LUIS DUQUE '16/'18 was selected a 2020 New Face of Civil Engineering in the professional category by the American Society of Civil Engineers.

The program recognizes an international field of young civil engineers for their achievements and contributions to society. The 10 All New Faces honorees were recognized during ASCE's annual Outstanding Projects and Leaders March 13 in Washington,

D.C.

Born and raised in Colombia, Duque aspired to become a structural engineer that could help communities all around the globe. As a member of Engineers Without Borders, Duque has volunteered on projects in Bolivia, Guatemala, Puerto Rico and Colorado, all of which helped small communities get access to clean water.

Duque enrolled at State because it allowed him the opportunity to play collegiate tennis and study to become a structural engineer. He played two seasons before giving up the sport to concentrate on his studies.

His graduate school research with associate professor Junwon Seo on the use of unmanned aerial vehicles (drones) as a bridge inspection tool found that they provide a cheaper alternative to inspecting bridges compared to traditional methods.

Duque, of Lafayette, Colorado, works as a bridge engineer at Foothill Bridge in Boulder, Colo. He is heavily involved in ASCE's Structural Engineering Institute, ASCE's Denver Younger Member Group and Engineers Without Borders.

"I want to continue to be involved with all these organizations and always be on the lookout for new opportunities. Be thankful for what you've been given and all the opportunities that you have, and know there is so much more you can do. I will never stop working toward helping others," he told ASCE News.



LELAND O'CONNELL, '12 electronics engineering technology, died Feb. 21, 2020, at the Brookings Hospital emergency room from an apparent heart attack at age 50.

He was born Jan. 27, 1970, in Rapid City. He grew up around the world traveling with his family in the United States Army. He attended Kansas State and then enlisted in the Navy. He later enlisted in the Army. He received the Purple Heart.

O'Connell and his family moved to Aurora in 2005. After working for various employers, he found his passion at Daktronics. He went back to college to complete his bachelor's degree and was pursuing a master's degree at the time of his death.

He is survived by his wife of 24 years, Lucinda, three children, Killian, Kienan and Delaney; his parents, Tom and Carol O'Connell, and a brother.



RUSTIN "RUSTY" OLSON, '03 construction management, died Feb. 15, 2020, of an apparent heart attack at the Brookings Hospital at age 40.

He was born Feb. 22, 1979, in Rochester, Minnesota.

While in college, he served in ROTC and the National Guard. After college, he went to conductor school and was hired as a railroad conductor. He

advanced to management with both BNSF Railroad and CSX Railway. In 2018, the family moved to Brookings where he worked as director of railroad operations for Civil Design Inc.

Survivors include his wife of 16 years, Megan (Townes), and three children, Lia, Josie and Oliver; his parents, Norman and Betty Olson; a brother and a sister.



ROSS WILCOXON, '86 mechanical engineering/'90 engineering, received the 2020 Thermi Award from Semi-Therm, a nonprofit educational foundation dedicated to the electronics thermal engineering community.

The Thermi award is intended to recognize a recipient's history of contributions to crucial thermal issues affecting the performance of semiconductor devices and systems.

Wilcoxon is an associate director in the Collins Aerospace Advanced Technology Group in Cedar Rapids, Iowa.

He conducts research and supports the development of prototype and production avionics systems for communication, processing, displays and radars. Specific areas of research include glass-based composite coatings, liquid metal cooling and integrating commercial heat pipes into avionics.

Wilcoxon holds 30 U.S. patents, primarily in microelectronics packaging and thermal management.

In addition to his SDSU schooling, Wilcoxon holds a doctorate in mechanical engineering from the University of Minnesota (1996). He received that while teaching at SDSU (1995-98). While obtaining his master's degree, he also was research/teaching assistant in the mechanical engineering department (1987-90).

Wilcoxon joined Collins Aerospace (formerly Rockwell Collins) in 1998. He has worked on technology needs for next generation systems such as Future Combat Systems, Joint Strike Fighter and Boeing 787.

He also serves on the mechanical engineering advisory board at SDSU.

YOUTH CAMPS

2020

SUMMER SCHOLARS

DATE: July 13 – 17, 2020

LOCATION: on campus

CONTACT: *Rebecca.Bott@sdstate.edu*, 605-688-5268,
<http://www.sdstate.edu/youth-engineering-adventure>

ACE (AEROSPACE CAREER AND EDUCATION) CAMP

DATE: July 12-15, 2020

LOCATION: on campus

CONTACT: *Sam Bjornestad*, acecamp@sdstate.edu,
605-688-4336, <https://www.sdstate.edu/consumer-sciences/ace-camp>

ELECTRICAL ENGINEERING AND COMPUTER SCIENCE CAMP

DATE: July 26-31, 2020

LOCATION: Daktronics Engineering Hall

CONTACT: *Jason Sternhagen*, 605-688-4526, *Jason.sternhagen@sdstate.edu* www.sdstate.edu/eecs-camp

BEST ROBOTICS

DATE: Oct. 24, 2020

LOCATION: Swiftel Center (east side of Brookings)

CONTACT: *Becky Pistulka*, Becky.Pistulka@sdstate.edu
or 605-688-6792, www.sdstate.edu/jerome-j-lohr-engineering/jackrabbit-best-robotics

READY, SET (SCIENCE, ENGINEERING, TECHNOLOGY)-GO!

DATE: Nov. 7, 2020

LOCATION: Crothers Engineering Hall

CONTACT: *Becky Pistulka*, Becky.pistulka@sdstate.edu or
605-688-4161
www.sdstate.edu/engr/camps/ready-set-go.cfm

TEAMS (TESTS OF ENGINEERING APTITUDE, MATHEMATICS AND SCIENCE)

DATE: Feb. 18, 2021

LOCATION: Volstorff Ballroom, University Student Union

CONTACT: *Christina Gerometta*; christina.gerometta@sdstate.edu or 605-688-5426

GEMS (GIRLS, ENGINEERING, MATHEMATICS AND SCIENCE)

DATE: March 27, 2021

LOCATION: Crothers Engineering Hall

CONTACT: *Becky Pistulka*, Becky.pistulka@sdstate.edu,
605-688-4161, www.sdstate.edu/engr/camps/gems.cfm

EASTERN SOUTH DAKOTA SCIENCE AND ENGINEERING FAIR

DATE: March 30, 2021

LOCATION: Club 71, Dana J. Dykhouse Stadium

Contact: *Brad Blaha*, Bradley.Blaha@sdstate.edu,
688-5133, www.sdstate.edu/science-and-engineering-fair

PROGRAM DESIGN CHALLENGE

DATE: April 1, 2021

LOCATION: Lewis & Clark Room, University Student Union

CONTACT: *Jerry Cooley*, jerry.cooley@sdstate.edu or
605-688-6618



SOUTH DAKOTA STATE UNIVERSITY

Jerome J. Lohr College of Engineering

CELEBRATING SDSU ENGINEERS



Tom Becker
Development Director
Jerome J. Lohr College of Engineering
SDSU Foundation
(605) 695-9250
Tom.Becker@SDStateFoundation.org

As I write this, Engineers Week (E-Week) is being celebrated around the United States. Founded in 1951 by the National Society of Professional Engineers, E-Week (Feb. 16–22) is dedicated to ensuring a diverse and well-educated future engineering workforce by increasing understanding of and interest in engineering and technology careers.

Dedicated to raising public awareness of engineers' positive contributions to quality of life, E-Week promotes recognition among parents, teachers and students of the importance of a technical education and a high level of math, science and technology literacy, and motivates youth to pursue engineering careers in order to provide a diverse and vigorous engineering workforce.

Since the first days as Dakota Agricultural College to today's South Dakota State University, engineering education has been a major part of SDSU's impact on the state, region and the world. Jackrabbits engineers have made a big impact on our campus and on the world. Our iconic Coughlin Campanile is a perfect example of this. Our engineering alumni have gone into the world with energy and ingenuity to research new ideas, develop products, build businesses and design the future of our world. Evidence of this can be seen by visiting the East Atrium in Crothers Engineering Hall where the SDSU Distinguished Engineers are recognized for their contributions to academia, industry, science and philanthropy.

It has been my privilege to meet and become acquainted with many of our amazing engineers and I am continually impressed with their accomplishments, humility and generosity. Raised on the farms and in the small towns of our region, they went on to change the world. E-Week is a great time for us to reflect on how Jackrabbits engineers have impacted the world and how their generosity has helped to transform the Lohr College of Engineering and the SDSU campus into a place that is creating the next generation of engineers.

Over the last 20 years, facilities in the Jerome J. Lohr College of Engineering have been transformed through the generosity of our alumni and supporters into arguably the best facilities and programs in our region. This transformation has helped recruit more young people to pursue careers in science, technology, engineering and mathematics. SDSU has a long history of high-quality engineering education. I have had conversations with many fellow engineering alumni where they proudly shared the moment they realized their engineering education at SDSU was second to none. SDSU has always had great instructors and when paired with great facilities, the outcome is creating excellence in engineering.

Our world has many challenges that have been met by the problem-solving minds of engineers. Today is no exception as we are facing many Grand Challenges for Engineering as defined by the National Academy of Engineering. These engineering challenges revolve around sustainability, health, security and infrastructure. The college, with the support of Jerry Lohr, has created the "Grand Challenges Scholarship" program with the goal of recruiting more students to join many other SDSU engineers in solving these grand challenges for engineering. Ultimately, the Lohr College of Engineering must increase the number of engineering graduates to meet the growing national demand.

During E-Week, it is fitting to consider how your SDSU engineering degree has positively impacted you and our world and how you might help continue the tradition of SDSU engineers by supporting scholarships, programs and facilities.

Go Jacks! and Go Jackrabbit Engineers!

Tom Becker '81



DAKTRONICS
HAS TAUGHT ME:

Difficult
=
Exciting

“Seeing the unique challenges of each project has allowed me to apply and develop problem-solving skills to see a successful outcome, which keeps me wanting to face new and exciting opportunities.”

DAVID MCKEEN, CM20
Project Management Student Employee



www.daktronics.com





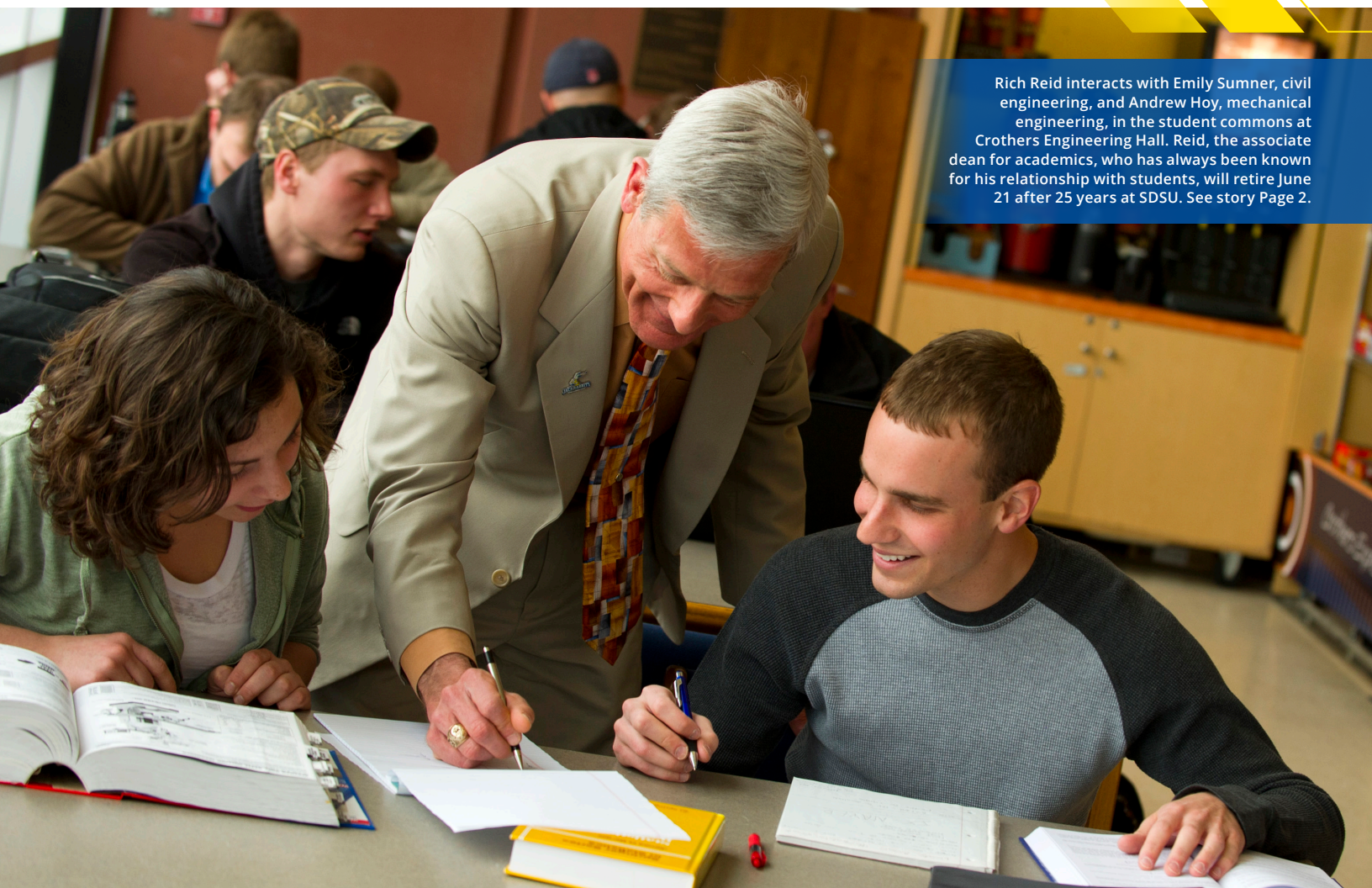
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STATE UNIVERSITY**

Jerome J. Lohr College of Engineering

*Crothers Engineering Hall
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Rich Reid interacts with Emily Sumner, civil engineering, and Andrew Hoy, mechanical engineering, in the student commons at Crothers Engineering Hall. Reid, the associate dean for academics, who has always been known for his relationship with students, will retire June 21 after 25 years at SDSU. See story Page 2.