South Dakota State University is the state’s 1862 Morrill Act land-grant university. It is the largest, most comprehensive university in South Dakota.

The university confers degrees through six colleges and serves students from all 50 states and 81 counties who can choose from more than 175 majors, minors and specializations. Also offered are 33 master’s degree programs, 15 Ph.D. programs and professional doctoral degrees in nursing and pharmacy.

The American Association of University Professors recently categorized SDSU as a Category 1 or doctoral-level institution. The recognition is the result of reaching guidelines for the number of doctoral recipients and the range in doctoral-level program offerings. The university has more than tripled the number of doctorate completions in less than 10 years, growing from 14 in 2006 to 47 in 2014.

Courses and degrees are offered through the colleges of Agriculture and Biological Sciences, Arts and Sciences, Education and Human Sciences, University College, Nursing, Pharmacy, the Jerome J. Lohr College of Engineering, the Van D. and Barbara B. Fishback Honors College and the Graduate School.

Over the last five years, university research has yielded 230 invention disclosures, 65 patents filed, 9 patents issued and 40 license agreements executed through the Office of Technology Transfer and Commercialization, resulting in more than $10 million in licensing revenue.

South Dakota State has been designated an Innovation and Economic Prosperity University by the Association of Public and Land-grant Universities and its Commission of Innovation, Competitiveness and Economic Prosperity. The designation recognizes the university for its work with public and private sector partners in states and regions to support economic development through a variety of activities including innovation and entrepreneurship, technology transfer, talent and workforce development, and community development.

"The [APLU] designation provides a direct recognition by peer land-grant and public universities of the impact that South Dakota State has on the economic growth and development of South Dakota and the region, and the promise investments in our university have to continue to improve the economy by creating jobs and wealth."

—David L. Chicoine
PRESIDENT, SOUTH DAKOTA STATE UNIVERSITY
A Strategic Vision for South Dakota State University is a five-year strategic plan that, as it is implemented, enhances the future for South Dakota and its citizens, while meeting the challenges of an increasingly global, complex and interconnected society.

IMPACT 2018 identifies a set of strategic goals that draw on the university’s strengths and its commitment to excellence, creating a pathway to the future as a high-performing institution that delivers greater value to students and stakeholders.

The plan provides indicators to measure progress. Its goals, outlined below, are rooted in the university’s historic land-grant mission, which calls for excellence in teaching, research, service and engagement.

**Goal 1**

Promote academic excellence through quality programs, engaged learners and an innovative teaching and learning environment.

**Goal 2**

Generate new knowledge, encourage innovations and promote artistic and creative works that contribute to the public good and result in social, cultural or economic development for South Dakota, the region, our nation and the world.

**Goal 3**

Extend the reach and depth of the university by developing strategic programs and collaborations.

**Goal 4**

Secure human and fiscal resources to ensure high performance through enhanced financial, management and governance systems.

Learn more at SDState.edu/impact2018
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Learn more at SDState.edu/impact2018
LARRY LEIGH, imaging engineer for the Jerome J. Lohr College of Engineering, is one of nine individuals to receive a Google Earth Engine Research Award. He will use Google Earth images to find more sites to calibrate earth-imaging satellites.
Assistant professor Matthew James was selected as a research fellow for the Landscape Architecture Foundation’s Case Study Investigation Program.

The program matches faculty-student research teams with design firms to document the benefits of landscape projects. The teams develop methods to quantify environmental, economic and social benefits and produce case-study briefs for LAF’s Landscape Performance Series.

A primary goal of the research program is to show how investments on unique landscape architecture projects have produced significant economic and quality-of-life impacts for communities. The collaboration also forms partnerships between university faculty, research student assistants and practitioners from private practice.

Four Department of Communication Studies and Theatre faculty and a student participating in Prairie Repertory Theatre received regional awards for the Sioux Falls area from BroadwayWorld.com: MELISSA HAUSCHILD-MORK, Best Choreographer (local) for “Shrek: The Musical”; BILLY WILBURN, Best Costume Design, Play or Musical (local) for “Shrek: The Musical”; JIM WOOD, Best Director/Play (local) for “Lonestar Love Potion”; COREY SHELSTA, Best Lighting Design, Play or Musical (local) for “Shrek: The Musical”; and student SAM MUNGER, Best Sound Design, Play or Musical (local) for “Spamalot.”

For other award-winning individuals visit SDState.edu/impact2018
NATIONAL CHAMPIONS

The Dairy Products Judging Team won the All Products competition at the 2014 Collegiate Dairy Products Evaluation Contest, claiming the national championship for the seventh consecutive year. It was held at Northern Illinois University. Lloyd Metzger also received the Aurelia and George Weigold Coach of the Year Award.

Pictured below are: assistant coach Lee Alexander; Rachel Achen, Warner, South Dakota; Natasha Laska, Norfolk, Nebraska; Rachel Johnson, Russell, Minnesota; Somil Gupta, India; and coach Lloyd Metzger.

For other award-winning individuals visit SDState.edu/impact2018
ALL-AMERICA HONORS AND MORE

Like his run through the record books at South Dakota State, the Missouri Valley Football Conference and the Football Championship Subdivision, honors piled up for Zach Zenner.

Zenner, now a member of the Detroit Lions, was named to three NCAA FCS All-America teams for his efforts on the field. They were:

• AFCA Football Championship Subdivision Coaches’ All-America;
• Walter Camp FCS All-America squad; and
• The Associated Press FCS All-America squad.

For his work in the classroom and the community, he received the following honors:

• The inaugural Mickey Charles Award as the top FCS scholar-athlete;
• 2014 Capital One Academic All-America® Team Member of the Year;
• Football Championship Subdivision Athletic Directors Association All-America Team;
• Finalist for the William V. Campbell Trophy;
• National Football Foundation’s National Scholar-Athlete Class; and
• Allstate AFCA Good Works Team.

COLLEGE OF PHARMACY

South Dakota State’s team of Alex Olinger, April Pottebaum and Keely Hamann finished as the national runner-up in the American College of Clinical Pharmacy’s Clinical Pharmacy Challenge, which included more than 110 teams. The three were tested beyond clinical pharmacy practice in areas that included anticoagulation, critical care, biostatistics, hematology/oncology, pediatrics and dermatology.

Pictured are: Olinger, Pottebaum (with plaque) and Hamann.
NEW SCHOOL OF DESIGN ALIGNS WITH NEEDS OF TODAY’S STUDENTS

At South Dakota State University, the difference is design.

The South Dakota Board of Regents approved plans to establish a School of Design for the 2015-2016 academic year. The approval is the finishing touch of several years’ worth of work to bring together five fields of study: architecture, graphic design, interior design, landscape architecture and studio arts. The school will be part of the College of Arts and Sciences. The model will allow for national accreditation, engaged learning through stronger and better coordinated programs and extending the reach and depth of the university through programs and collaborations.

The new school will mean a high-quality academic experience and professionally oriented curricula, incorporating strong ties to industry and preparing graduates for professional licenses and entry-level careers in the five different fields of study.

The school’s curriculum will include a set of core first-year courses for all majors—a common introduction to the university, introduction to design theory and practice, a creativity course and later an upper-level course to work on collaborative design projects.

First-year students will enroll in a collaborative design studies course that focuses on design thinking, creativity and professional exploration to create unique pathways for them to explore design interests before beginning their second year.

Students currently enrolled in one of the fields will be able to remain on their current graduation tracks, if desired, or explore opportunities to collaborate with the other fields of study. Faculty in the School of Design will continue in their current areas of expertise, but will enhance educational opportunities through collaboration with other design disciplines.

The new School of Design will offer Bachelor of Fine Arts degrees in architecture, graphic design, interior design and studio art, and a Bachelor of Landscape Architecture degree.

“Students can discover each design major’s offerings and be able to tailor their educational experiences to their interests.”

—Tim Steele
DIRECTOR, SCHOOL OF DESIGN
A key performance indicator of IMPACT 2018 is the number of accredited, certified or approved programs. Accreditation assures a program meets nationally endorsed standards. This past year, three programs received first-time accreditation, increasing the total to 35. The programs receiving accreditation include:

**BIOCHEMISTRY MAJOR:** The American Society of Biochemistry and Molecular Biology has accredited the university’s undergraduate biochemistry major for a full seven-year term. The organization noted the program’s excellent faculty, outstanding teaching and research, a strong interdisciplinary curriculum and modern facilities.

**PHARMACY RESIDENCY PROGRAM:** The College of Pharmacy’s Community Residency Program successfully passed its first-ever accreditation site visit. As a result, the program received accreditation for a three-year period.

**DIETETICS INTERNSHIP:** The Accreditation Council for Education in Nutrition and Dietetics Board granted “candidacy for accreditation” for State’s dietetics internship graduate program in nutrition and dietetics. SDSU is the only institution in South Dakota with an undergraduate didactic program in nutrition and dietetics and now it is the only one to provide a combined dietetics graduate degree and internship.
With $3.6 million in federal funds, South Dakota State leads an effort to give American Indian and low-income students a jump-start on college.

SDSU and five other universities and a tribal college were among the inaugural group of First in the World grant recipients from the U.S. Department of Education, through its Fund for the Improvement of Postsecondary Education. The grants were awarded to institutions with innovative, affordable programs aimed at student success.

The South Dakota Jump Start program started in October 2014 with a goal to serve 900 South Dakota students as they move through the critical years of postsecondary education.

Jump Start identified obstacles students face when considering college. For example, the program is designed to address anxieties reported by American Indian students—culture shock, lack of mentorship, fear of alienation, financial hardship and leaving home.

The first step, and a key component of the Jump Start program, will involve access advisers visiting and working within South Dakota high schools. The access advisers are not recruiters, rather supportive mentors who speak one-on-one with students and parents, and assist with scholarship applications, ACT preparation, financial aid counseling and more.

The foundation of the program is the Earn and Learn program. Prior to their freshman, sophomore and junior years, students will have the opportunity to live on campus, earn college credits and work part time to help pay for their education. During their final summer of Earn and Learn, students will take part in campus internships or conduct research with a faculty member.

The grant provides each student with an allowance to buy books, computers or class materials.

Each campus has hired a full-time retention adviser to support students on a personal and educational level throughout their college career.

Jump Start will break new ground by bringing together the Board of Regents’ universities and the tribal college, Oglala Lakota College, located on the Pine Ridge Indian Reservation.

More than 500 universities in the country applied for the First in the World grant, and the South Dakota collaborative was one of 24 to receive funding.
“Students participating in Jump Start are able to form tight learning communities and make friends over the summer and will have that support throughout each academic year.”

— Laurie Nichols
Provost and Vice President for Academic Affairs

Programs like Jump Start have helped SDSU exceed the five-year target for enrollment of underrepresented students in the second year of IMPACT 2018.
A strong understanding of industry needs helped dairy science researchers file eight invention disclosures in FY 2015. That number represented a dramatic increase, considering that from 2007 to 2014, department researchers filed 10 disclosures. This output came from a department of 10 faculty members, including department head Vikram Mistry, and approximately 24 graduate students.

Mistry attributed the record-setting year to faculty researchers who understand the needs of the industry, develop an innovation and know which stakeholders would be interested in implementing the invention. Dairy scientists developed new milk ingredients that give products a longer shelf life, improve the quality of low-fat dairy products and help fight malnutrition in Third World countries.

Strong industry support and the department’s unique combination of production and manufacturing help attract high-caliber researchers with strong ties to the industry.

In addition, the Midwest Dairy Food Research Center has supported applied dairy foods research since 1988 through dairy checkoff dollars. Dairy processors, farmers and friends also contributed more than $9 million to help build the Davis Dairy Plant, which opened in 2011 and has been integral to their research and teaching projects.
Technology transfer performance kicked into high gear this past academic year, fueled by 37 disclosures and 14 new intellectual property licenses. Nearly one-fourth of the disclosures came from dairy science.

Assistant professor Hasmukh Patel of the Department of Dairy Science generated four disclosures while professor Sanjeev Anand, associate professor Ashraf Hassan, professor Lloyd Metzger and assistant professor David Casper each had one.

Anand worked with Joan Hegerfeld-Baker, SDSU Extension food safety specialist, on a virtual food safety lab, and Hassan has discovered a food-grade enzyme that can be used to combat microbe buildup in dairy equipment. Metzger collaborated with Idaho Milk Products to develop a process to manufacture mineral-stabilized milk powders used in products such as baked goods. Casper developed a way to enhance milk production in lactating dairy cows.

In addition, Medgene, an animal health company that develops therapeutics and diagnostics, and Tranzderm Solutions, which provides plant-based systems and services for the cosmetic and pharmaceutical markets, licensed new technologies.

In 2014, Medgene received a Phase I Small Business Innovation Research grant from the National Institutes of Health to work on a treatment to stimulate regeneration of the lymphatic system for breast cancer survivors. This marks the first time since 2009 that a South Dakota-based company has received a Phase I NIH award.

The innovative treatment will use a drug delivery system developed by Om Perumal, head of the Department of Pharmaceutical Sciences and chief scientific officer of Tranzderm, using nanoparticles derived from a corn protein.
South Dakota is home to nine American Indian reservations, and nearly 9 percent of the state’s population is American Indian, more than seven times the national average. As good stewards, South Dakota State University focuses on issues that affect the American Indian community and families.

Health care, in particular, is an area where SDSU programs and research make a difference.

In the past year, College of Nursing students spent a week on the Crow Creek Reservation working at the Fort Thompson Indian Health Services, visiting residents in their homes and immunizing students at the Crow Creek Tribal School as part of outreach that’s been going on since 2008. Becky Maurer has overseen the outreach efforts since retiring from the College of Nursing faculty in Brookings in 2011.

In addition, a one-year pilot study targeting 3-, 4- and 5-year-olds and their caregivers on the Pine Ridge Reservation will determine whether an evidence-based Strengthening Families Program for preschoolers can improve the children’s social, emotional and nutritional health. Principal investigator Marylou Mylant of the College of Nursing in Rapid City focuses on the mental health of children, adolescents and young families. She works with co-investigator Mary Isaacson, an assistant nursing professor who specializes in Native American health care.

The pilot study is made possible through a nearly $100,000 grant from the National Institute of Minority Health and Health Disparities of the National Institutes of Health through the Collaborative Research Center for American Indian Health.

With help from a tribal community advisory board and clinical advisory group, College of Nursing Dean Nancy Fahrenwald and research coordinator Shana Harming created educational materials to encourage conversations about organ donations and kidney transplants among American Indians and their families. These materials employed the cultural tradition of oral storytelling—the most effective way they uncovered through months of research to reach the tribal communities.
“Outreach creates a bridge that connects communities and the modern-day health and science, which can be hard for American Indians who may be out of touch with everything taking place outside the communities.”

—Ernest Weston Jr.
Senior, Political Science; President of the SDSU MiDowiya Society; Member of the Pine Ridge Indian Reservation

Learn more at SDState.edu
"ADRDL scientists understand the meaning of the word service."

— Scott Dee
DIRECTOR OF RESEARCH AT PIPESTONE VETERINARY SERVICES
IDENTIFY, CONTROL EMERGING VIRUSES

When an emerging virus strikes the agriculture industry, producers, veterinarians and health officials rely on fast, accurate diagnostic testing to identify and control outbreaks. That’s what they get at the Animal Disease Research and Diagnostic Laboratory.

The lab’s response to outbreaks of Porcine Epidemic Diarrhea virus and highly pathogenic avian influenza proved that. Pork producers lost anywhere from 4 to 5 million piglets due to PEDv. The U.S. Department of Agriculture reported nearly 37 million birds in 15 states had to be destroyed because of the avian influenza outbreak.

Lab scientists conducted more than 90,000 tests due to PEDv and avian influenza outbreaks with personnel working around the clock to provide the quick turnaround the lab’s clients have come to expect. More than 500,000 diagnostic tests were done in 2014-15, a 27 percent increase over the previous year.

ADRDL provides diagnostic testing services to help veterinarians and health officials identify, control and treat animal diseases. As a member of the U.S. Department of Agricultural National Animal Health Laboratory Network, a federal/state consortium of laboratories, the lab is prepared to test for various endemic and foreign animal diseases when the need arises.

“"The diagnostic lab was instrumental in helping us become the first company in the United States to develop a PEDv vaccine.”"

— Hank Harris
President and CEO of HarrisVaccines

Learn more at SDState.edu
Researchers are finding innovative ways to deliver cancer-fighting drugs where they’re needed and are using natural compounds to supplement traditional cancer treatments.

One in eight women in the United States will develop breast cancer. More than 95 percent of breast cancer originates in the milk ducts of the breast.

Om Perumal, head of the Department of Pharmaceutical Sciences, has developed a new drug delivery system for early stage breast cancer that delivers large doses of medication directly to the affected tissues via a gel or lotion applied to the nipple, instead of via traditional oral tablets.

The drug is absorbed through openings into the milk ducts, reducing side effects since the medication does not enter the bloodstream. Tests show that twice as much drug can be absorbed through the nipple as through the surrounding skin of the breast.

Perumal’s patent-pending technology has been licensed to Tranzderm Solutions, a Brookings-based start-up company.

Meanwhile, Moul Dey, an associate professor in the Department of Health and Nutritional Sciences, is studying how a compound and enzyme that occur naturally in cruciferous vegetables—cauliflower, cabbage, broccoli and Brussels sprouts—may help prevent recurrence and spread of some cancers.

When a person eats one of those vegetables, the precursor compound and enzyme combine during the chewing process to produce phenethyl isothiocyanate, or PEITC, within the body.

PEITC attacks cancer stem cells that survive chemotherapy and radiation treatments and can cause regeneration of the original tumor and spread cancer to secondary locations.

When Dey and her team have treated cancer stem cells with PEITC in a Petri dish, about 75 percent died within 24 hours using a 20-micromolar concentration of the compound. In other experiments, they have found that 10-micromolar concentrations of PEITC can prevent the spread of cancer in mouse lung tissue.

Based on information from scientific literature, the concentrations of PEITC that Dey and her team typically use in their research—5 to 15 micromolars—may be achieved through diets rich in certain types of cruciferous vegetables, particularly upland and water cress.

Dey’s research is funded by a National Institutes of Health grant of more than $875,000 and receives additional support from the South Dakota Agricultural Experiment Station.
Water cress, which is available in grocery stores, and upland cress are rich sources of PEITC.
WIRTH EXCELS
IN CLASSROOM, COMMUNITY AND COMPETITION
One of the most decorated track and field athletes in SDSU history, Mary Wirth set the bar high for other student-athletes in terms of academic and athletic success all while being a leader in community service. The school record-holder in the indoor high jump at 6-feet, Wirth compiled a 3.92 GPA in biology.

In addition to recording 25 victories in the high jump, including three Summit League outdoor crowns and two Summit League indoor titles, Wirth received an NCAA Postgraduate Scholarship, was recognized multiple times as a Summit League Distinguished Scholar and was on the Commissioner’s List of Academic Excellence. She was also the first student-athlete in Jackrabbit history to earn Summit League Indoor Field Athlete of the Year honors.

Through it all, Wirth dedicated herself to helping communities, whether it was in her hometown of Sioux Falls, Brookings or elsewhere. She participated in various youth mentoring events and traveled to Jamaica as part of a group that interacted with numerous people while helping build two houses.

The first Jackrabbit in the Division I era to qualify for the NCAA Indoor Track and Field Championships and to become a two-time All-America, Wirth has also volunteered for on-campus activities ranging from Project Joy, which raises money to purchase gifts and other surprises for those without much during the holiday season, and Samaritan’s Feet.

Jackrabbits follow Wirth’s lead in the classroom as approximately 350 student-athletes recorded a 3.0 GPA or higher last year. In the area of community relations, SDSU has won The Summit League Food Fight the past three years and four times since its inception in 2008-09. Student-athletes take donations at home games while interacting with fans and supporters. In 2014-15, SDSU student-athletes collected 34,681.07 pounds of food and $5,540 in cash, which was donated to the Brookings Food Pantry.
“The Green Revolution started here in a backyard in Brookings, South Dakota,” according to Kevin Kephart, vice president for research and economic development.

The seed from which it grew was Hope wheat, a successful breading outcome nearly 100 years ago by State graduate Edgar McFadden.

The discovery was no accident. It was the result of early purpose-driven research to address stem rust, a fungus that corrodes the stalk and shrivels production of wheat. It was wiping out as much as 50 percent of a continent’s wheat production during epidemics in the early 1900s.

McFadden experienced that firsthand when he took over operation of the family farm in Webster at age 12 in 1904 after his father was badly injured. Before harvest, the wheat crop was attacked by stem rust. Stalks broke, kernels shriveled and what should have been a 40-bushel-per-acre yield was reduced to only five bushels per acre.

McFadden entered South Dakota School of Agriculture in fall 1911 with an idea: Was it possible to cross an ancient variety of wheat that resisted stem rust with common bread wheat? Scientists of the time said no, the plants were too different. But McFadden, encouraged by his professor, Manley Champlin, did it anyway.

He made the cross in the garden of a Brookings boarding house in 1916. The result was a small handful of poorly developed seeds, only one of which grew when planted the following spring. But that plant yielded more than 100 seeds, which McFadden planted in 1918 at the South Dakota State College research station in Highmore. Over the next seven years, descendants of that single seed were cultivated, segregated and selected until, in 1925, a variety designated as H49-24 was given the name “Hope wheat” because of its resistance to stem rust and hail damage, and its high yield and protein content. In spring 1926, it was distributed to other experiment stations for use as a parent.

By World War II, some 15 million acres of wheat derived from that initial strain were planted. In 1943, U.S. wheat production totaled 23 million tons, up 3 million tons from 1939. The yields fed not only America and its troops, but millions of others worldwide.
McFadden achieved breakthroughs in wheat genetics in South Dakota and Texas focusing on stem rust “Puccinia graminis,” a disease that threatened the nation’s wheat crop. In 1913, he began an aggressive breeding program to improve disease resistance of wheat. From a single seed he developed a spring wheat variety that was immune to stem rust. He named it ‘Hope.’

McFadden’s breakthrough research, which he started as an undergraduate at State more than 100 years ago, changed wheat breeding and ultimately fed millions of people worldwide.

The presentation, “Foundations for the Green Revolution: The Insights of Edgar S. McFadden and Norman E. Borlaug,” by Kevin Kephart, South Dakota State University’s vice president of research and economic development, was a highlight, telling McFadden’s story. Subsequently, Kephart was invited to make the presentation in Washington, D.C., at an event hosted by the United States Department of Agriculture, and at industry meetings in Brussels and Sydney.

To honor McFadden’s legacy, the Northern Plains Biostress Laboratory was renamed the Edgar S. McFadden Biostress Laboratory. The laboratory originally was dedicated in September 1993 and houses much of the university’s agronomic and biological research, as well as several classrooms.

Excerpts from the McFadden Symposium can be viewed here: www.sdstate.edu/mcfadden-video.
2014: Extension looks to the future as it celebrates 100 years of service

In 1914, the Smith-Lever Act created a system of cooperative extension services to help transmit the knowledge, research and innovations created in the nation’s land-grant universities to the people and communities that supported them. It was an idea almost as revolutionary as the Morrill Act, which enabled many of those land-grant institutions some 52 years earlier.

In recent years, SDSU Extension has implemented new approaches to meet the needs of a changing world. It continues to be a trusted source of research-based, unbiased information for the agricultural stakeholders, in a world where community is one defined not by counties, but by satellites and cell towers.

Food and families, community development, urban and rural programming and programs designed specifically to engage American Indian communities in South Dakota are areas of particular focus, chosen to empower citizens to be more competitive in a growing global economy.

Four years ago, SDSU transitioned its information-delivery system to a vibrant and responsive Web-based learning platform called “iGrow.” At the same time, a select group of well-trained, discipline-focused, field specialists were installed at eight regional centers.

By embracing technology, SDSU Extension not only has retained its relevance, but is able to foster and serve an expanding list of communities—from home gardeners to farmers and ranchers, from individuals to industry, for those in both urban and rural areas—and to meet challenges ranging from the delivery of traditional services to addressing 21st-century concerns about food access, food safety and nutrition.

### iGrow.org usage:

- **Users**: 593,559
- **Page Views**: 926,014
- **Time**: 13839:51:28

*Numbers from Oct. 1, 2013-Sept. 30, 2014*
ONLINE EDUCATION PROGRAMS RECEIVE RECOGNITION, meet student needs

SD State Online, comprising the university’s online education programs, is achieving national distinction and strengthening local relevance by providing greater access to education for students around the state, across the country and around the world.

In both 2013 and 2014, SDSU ranked among the nation’s most affordable online colleges.*

Online courses at SDSU are the same courses prepared by the same professors with the same quality and demanding the same rigor as on-campus courses, and online students receive the same diploma as their campus counterparts. One hundred percent of SDSU online programs are accredited by the Higher Learning Commission North Central Association.

South Dakota is among the top 10 states that provide 31 percent of all online enrollments across the country, while SDSU is among only 3.3 percent of U.S. higher education institutions that serve 3,000 or more online students.

Nationally, 33.5 percent of all U.S. higher education students enroll in at least one online course. At SDSU, 61 percent of students take at least one online course.

QUICK FACTS ABOUT SD STATE ONLINE

- 30 online degree programs
- 13 graduate degrees
- 7 undergraduate degrees
- 10 certificate programs
- 7,670 students took one or more online courses in FY2015
- Approximately 37,561 online credit hours in FY2015
- 570 High School Dual Credit students enrolled
- 1,681 High School Dual Credit credit hours
- 701 online course sections

ONLINE MASS COMMUNICATION MASTER’S RECEIVES ‘INNOVATIVE PROGRAM’ AWARD

Recognized for its innovative online mass communication master’s degree program, the South Dakota State University Department of Journalism and Mass Communication received the 2014 University Professional Continuing Education Association Central Region Innovative Program Award.

Mary Arnold, head of the Department of Journalism and Mass Communication, and Lyle Olson, graduate program coordinator, spearheaded the creation of the program in 2009.

To date, more than 60 students have completed the program.

*Source: affordablecollegesonline.org
PROGRESS CONTINUES ON 2025 DESIGN AND MASTER PLAN

APRIL’S DEDICATION SIGNIFIES MILESTONE

The spring 2015 dedication of the Architecture, Mathematics and Engineering Building was another step in implementing the university’s 2025 Design and Master Plan. Adopted in 2012, a key principle of the plan sets a standard for quality spaces within campus to enrich students’ academic and campus-life experience and engender respect for the physical environment.

The 62,000-square foot building, occupied in summer 2015, is home to the Departments of Mechanical Engineering, Construction and Operations Management, Mathematics and Statistics and Architecture. Construction and operations management, architecture and mechanical engineering share shop space, which bring disciplines together from different colleges and captures synergies.

An important element in implementing the 2025 Design and Master Plan is the South Dakota Board of Regents’ Higher Education Facilities Fund capital improvement plan. The 10-year HEFF plan was announced in 2011 by the Board of Regents and approved by the Legislature in 2012. At the time, the university had five facilities from the 2025 Design and Master Plan listed on the HEFF capital improvement plan. Three are complete or underway—the Architecture, Mathematics and Engineering Building, the Cow-Calf Education and Research Facility, and a new headhouse/greenhouse.

University leaders are working toward completion of two other HEFF plan facilities—a new Visual Arts and Design building for the new School of Design and an addition to the Performing Arts Center that will include a new theater to replace Doner Auditorium. University leaders and SDSU Foundation staff are raising the private funds necessary to complete both projects.
THE UNIVERSITY’S 2025 DESIGN AND MASTER PLAN, WHICH RECOGNIZED THE UNIVERSITY’S GROWTH AND DEVELOPMENT OVER THE NEXT DECADE, CONSISTS OF FOUR GUIDING PRINCIPLES:

- Facility improvements to support the institution’s mission and future needs of students, faculty and staff;
- Realignment of campus parking and how parking serves as a catalyst to the development of the plan;
- Development and connectivity of campus greens for visual and functional purposes; and
- Utilization of pedestrian corridors throughout campus.
Part of being a higher-performing university is assuring an innovative teaching and learning environment. In 2013, a task force engaged a consultant to inventory and evaluate all classrooms on the SDSU campus. While the university had sufficient classroom space, the analysis determined that the types of classrooms necessary to facilitate newer pedagogies were in demand. In short, there was an overabundance of lecture classrooms and a shortage of more interactive classrooms.

A detailed improvement plan was developed for all 99 classrooms managed by the university. It was determined that nearly 20 of those would be improved each year, beginning in the summer of 2014 until project completion in 2018. The total cost will be $10.2 million, split between existing resources and private funds. The SDSU Foundation is coordinating fundraising.

As of fall 2015, classrooms in the following buildings have been upgraded: Agricultural Engineering, Bailey Rotunda, The Barn, Edgar S. McFadden Biostress Laboratory, Solberg Hall, the South Dakota Art Museum, Wagner Hall, Wecota Hall, Wenona Hall and Yeager Hall.

When the project is complete, SDSU will have five active learning classrooms, four collaborative classrooms, 24 lecture fixed and 56 lecture mobile classrooms, nine seminar classrooms, and one high-tech conference seminar classroom in the current location of Doner Auditorium.

**CLASSROOM TYPES**

**ACTIVE LEARNING:** High-tech classrooms supported by extensive connectivity, high-definition displays and computer workstations; ideal for computer-driven classes and group problem-solving.

**COLLABORATIVE:** Versatile, informal classrooms with mixed seating, including couches, raised tables and lounge-style seating; ideal for brainstorming and small-group work.

**LECTURE FIXED:** Traditional, auditorium-style classroom with enhanced presentation technology; ideal for large, lecture-based classes and keynote presentations.

**LECTURE MOBILE:** Lecture-style classrooms with lightweight, mobile furnishings; ideal for lecture-based classes but easily changeable for discussion groups.

**SEMINAR:** Conference-style classrooms with a large, shared table and chairs; ideal for smaller classes and round-table group discussion.

Learn more at SDState.edu
STRATEGIC REINVESTMENT FUND OFFERS OPPORTUNITIES FOR INNOVATION

The Strategic Reinvestment Fund is an important mechanism that fosters innovation and initiatives that accelerate process toward achieving goals outlined in the university’s strategic plan, IMPACT 2018. The fund is part of the university’s decentralized budget model and is available in two pools dedicated to strengthen the faculty and strengthen university programs.

The fund consists of $1.5 million. A $1 million component is associated with the annual University Budget Oversight Committee reports and budget hearings and is awarded based on merit and matching funds from the proposing college or unit. The remaining $500,000 is allocated at the discretion of Provost Laurie Stenberg Nichols for timely requests that improve institutional performance.

Proposals received are reviewed by a committee comprised of no fewer than five tenured faculty who consult with and make recommendations to the provost. The provost, in turn, consults with the Office of Business and Finance and makes recommendations to President David L. Chicoine about use of the funds. The president consults with the Faculty Budget Planning Committee prior to making final decisions about how the funding will be implemented.

Since the fund was implemented in July 2015, more than 40 proposals have been funded, including the hiring of 15 tenure-track faculty, 15 teaching assistants and a variety of other faculty, instructors, advisers and professionals.

The Strategic Reinvestment Fund supported the development and launch of the new School of Design, studio upgrades and efforts to achieve first-time accreditation or reaccreditation for the various fields of design it comprises; the cross-disciplinary precision agriculture major launched by the College of Agriculture and Biological Sciences and the Jerome J. Lohr College of Engineering with corporate partners; and the Master of Public Health degree offered by the colleges of Education and Human Sciences, Nursing and Pharmacy, in collaboration with the University of South Dakota.

The fund also invested in the institutional repository in Briggs Library in collaboration with the Graduate School, the Office of Information Technology and the Division of Research and Economic Development. The repository will collect, preserve, highlight and provide access to the university’s intellectual output, including dissertations and theses, copyright-free faculty research and digital special collections.
## PERFORMANCE INDICATORS

### GOAL 1
Promote academic excellence through quality programs, engaged learners and an innovative teaching and learning environment.

<table>
<thead>
<tr>
<th>PERFORMANCE INDICATORS</th>
<th>BASELINE</th>
<th>2018 TARGET</th>
<th>2015 STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of accredited, certified or approved programs.</td>
<td>32</td>
<td>42</td>
<td>37</td>
</tr>
<tr>
<td>NSSE Academic Challenge Engagement Indicators</td>
<td>Higher-Order Learning: 36.6 FY; 39.1 SY Reflective &amp; Integrative Learning: 30.8 FY; 34.9 SY Learning Strategies: 35.3 FY; 34.9 SY Quantitative Reasoning: 26.0 FY; 30.8 SY</td>
<td>Higher-Order Learning: 38.8 FY; 40.3 SY Reflective &amp; Integrative Learning: 35.3 FY; 38.0 SY Learning Strategies: 39.0 FY; 39.6 SY Quantitative Reasoning: 27.6 FY; 30.2 SY</td>
<td>Higher-Order Learning: 36.6 FY; 39.1 SY Reflective &amp; Integrative Learning: 30.8 FY; 34.9 SY Learning Strategies: 35.3 FY; 34.9 SY Quantitative Reasoning: 26.0 FY; 30.8 SY</td>
</tr>
<tr>
<td>Number of graduates per year</td>
<td>2,256 total 1,834 undergraduate 353 graduate 69 professional</td>
<td>2,660 total 2,180 undergraduate 392 graduate 88 professional</td>
<td>2,339 total 1,882 undergraduate 350 graduate 107 professional</td>
</tr>
<tr>
<td>Retention rate</td>
<td>75%</td>
<td>80%</td>
<td>77%</td>
</tr>
<tr>
<td>Enrollment</td>
<td>10,397 Brookings campus 2,186 off-campus 12,583 overall 10,957 undergraduate 1,208 graduate 418 professional</td>
<td>11,405 Brookings campus 2,608 off-campus 14,013 overall 11,878 undergraduate 1,708 graduate 427 professional</td>
<td>10,575 Brookings campus 1,982 off-campus 12,557 overall 10,792 undergraduate 1,332 graduate 433 professional</td>
</tr>
<tr>
<td>Enrollment of honors-eligible students</td>
<td>2,172</td>
<td>2,390</td>
<td>2,136</td>
</tr>
<tr>
<td>Enrollment of underrepresented students</td>
<td>1,416</td>
<td>1,558</td>
<td>1,614</td>
</tr>
<tr>
<td>Number of STEM graduates</td>
<td>710</td>
<td>1,000</td>
<td>814</td>
</tr>
</tbody>
</table>
Generate new knowledge, encourage innovations and promote artistic and creative works that contribute to the public good and result in social, cultural or economic development for South Dakota, the region, our nation and the world.

<table>
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<tr>
<th>PERFORMANCE INDICATORS</th>
<th>BASELINE</th>
<th>2018 TARGET</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Research spending</td>
<td>$68.7 million annually</td>
<td>$115 million annually</td>
<td>$58.3 million</td>
</tr>
<tr>
<td>Research spending in private-sector partnerships and collaborations</td>
<td>$4.8 million annually</td>
<td>$10 million annually</td>
<td>$5.9 million annually</td>
</tr>
<tr>
<td>Interdisciplinary bioscience and engineering initiative</td>
<td>Conceptual planning</td>
<td>Laboratory dedication</td>
<td>Finalized concept (Canon Design Report)</td>
</tr>
<tr>
<td>Invention disclosures</td>
<td>33 annually</td>
<td>80 annually</td>
<td>37 annually</td>
</tr>
<tr>
<td>Royalty-bearing IP licenses Start-ups</td>
<td>5 annually</td>
<td>15 annually</td>
<td>14 annually</td>
</tr>
<tr>
<td></td>
<td>2 annually</td>
<td>8 annually</td>
<td>4 annually</td>
</tr>
<tr>
<td>Start-up companies and collaborating businesses</td>
<td>5 start-ups</td>
<td>15 start-ups and collaborating businesses</td>
<td>7 start-ups/ collaborating businesses</td>
</tr>
</tbody>
</table>

Learn more at SDState.edu/impact2018
Extend the reach and depth of the university by developing strategic programs and collaborations.

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>National, regional or discipline-related competitive grants and sponsored programs administered by SDSU Extension</td>
<td>30</td>
<td>45</td>
<td>24</td>
</tr>
<tr>
<td>Regional and national award recognitions obtained</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>People annually attending on-campus and off-campus sponsored events.</td>
<td>329,420</td>
<td>518,150</td>
<td>318,245</td>
</tr>
<tr>
<td>iGrow (SDSU Extension portal)</td>
<td>91,200 unique visits</td>
<td>500,000 unique visits</td>
<td>593,559 unique visits</td>
</tr>
<tr>
<td>Degrees offered online and at University Centers</td>
<td>22 online 25 at University Centers</td>
<td>40 online 40 at University Centers</td>
<td>30 online 20 at University Centers</td>
</tr>
<tr>
<td>Carnegie Foundation Community Engagement Classification</td>
<td>Not designated</td>
<td>Designated at first possible opportunity</td>
<td>Not designated</td>
</tr>
<tr>
<td>Active agreements with universities, community colleges and technical institutes</td>
<td>50</td>
<td>150</td>
<td>87</td>
</tr>
<tr>
<td>Post-season Participation</td>
<td>3 teams/individuals annually</td>
<td>5 teams/individuals annually</td>
<td>7 teams/individuals annually</td>
</tr>
<tr>
<td>Student-athletes on Conference Academic Honor Roll</td>
<td>50%</td>
<td>55%</td>
<td>57%</td>
</tr>
<tr>
<td>Jackrabbit Club Members</td>
<td>1,600</td>
<td>3,000</td>
<td>1,640</td>
</tr>
</tbody>
</table>
### Secure human and fiscal resources to ensure high performance through enhanced financial, management and governance systems.

#### PERFORMANCE INDICATORS

<table>
<thead>
<tr>
<th>ENDICATORS</th>
<th>BASELINE</th>
<th>2018 TARGET</th>
<th>2015 STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endowed faculty positions</td>
<td>3</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Employee job satisfaction</td>
<td>63%</td>
<td>75%</td>
<td>68%</td>
</tr>
<tr>
<td>Alumni satisfaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84% would attend SDSU again</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34% had an excellent experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90% would attend SDSU again</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50% had an excellent experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84% would attend SDSU again</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34% had an excellent experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus climate and environment</td>
<td>Fall 2013 Campus Climate Survey</td>
<td>TBD from initial survey data</td>
<td>Survey completed, data being analyzed</td>
</tr>
<tr>
<td>University endowment</td>
<td>$83 million</td>
<td>$135 million</td>
<td>$100 million</td>
</tr>
<tr>
<td>Annual state funding</td>
<td>$56.2 million</td>
<td>$65.2 million</td>
<td>$64.8 million</td>
</tr>
<tr>
<td>Information technology FTEs per 1,000 institutional FTEs</td>
<td>5 FTEs per 1,000</td>
<td>5.03 FTEs per 1,000</td>
<td>3.6 FTEs per 1,000</td>
</tr>
<tr>
<td>Technology-related expenditures per student, faculty and staff FTE</td>
<td>$697</td>
<td>$800</td>
<td>$528</td>
</tr>
<tr>
<td>Faculty and staff satisfaction on shared governance</td>
<td>50%</td>
<td>70%</td>
<td>54%</td>
</tr>
<tr>
<td>Leadership development completed for deans, department heads and senior faculty</td>
<td>N/A</td>
<td>90%</td>
<td>54.4%</td>
</tr>
</tbody>
</table>
Secure human and fiscal resources to ensure high performance through enhanced financial, management and governance systems.

## PERFORMANCE INDICATORS

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</tr>
</thead>
<tbody>
<tr>
<td>Lean management initiative</td>
<td>0%</td>
<td>80%</td>
<td>Office established</td>
</tr>
<tr>
<td>Decentralized budget implementation</td>
<td>Incremental budget structure</td>
<td>Completion</td>
<td>Full implementation was completed in FY15</td>
</tr>
</tbody>
</table>

### 2025 Design and Master Plan and associated capital projects


- **Section 2**: Today’s Environment
- **Section 3**: Recommendations

- 2 new construction projects completed:
  - Architecture, Mathematics and Engineering Building (HEFF)
  - Sanford-Jackrabbit Athletic Complex

- 3 new construction projects started:
  - Dana J. Dykhouse Stadium
  - Swine Education and Research Facility
  - Cow-Calf Research and Education Facility (HEFF)

- Renovations completed:
  - E-trading Lab
  - 18 Classrooms

- 2 outdoor projects completed:
  - 11th Street removal
  - Administration Lane removal

- 1 outdoor project started:
  - Jackrabbit Green

Learn more at [SDState.edu/impact2018](http://SDState.edu/impact2018)