Fall Career Fair Hosts Nearly 150 Employers

Mines hosted 144 employers for the annual fall Career Fair, including 20 who recruited on campus for the first time.

Around 1,300 Mines students attended, networking with employers including Alcoa, Boston Scientific, Burns & McDonnell, Cargill, Caterpillar, Daktronics, Kiewit, Nucor and Peabody Energy, as well as regional companies and engineering firms. In all, 144 employers from 25 states plus the District of Columbia, including 40 from South Dakota, were on hand to visit with Mines students. In addition, nearly half of the employers stayed to conduct next-day interviews with approximately 500 students.

SD Mines graduates continue to be in demand, with a 98 percent placement rate and an average starting salary of over $63,000.

M Week Celebrates Homecoming, Hardrocker Spirit

Themed “Rocker Days with a 90’s Graffiti Twist,” the M Week homecoming celebration kicked off Sept. 27 and concluded Oct. 4 with fun events for students, alumni and the community.

Seniors and freshmen enjoyed a picnic at Dinosaur Park before freshmen draped the large vinyl “M” over the Apatosaurus, which signifies the official start to M Week. Following the picnic, students “Painted the Town,” decorating downtown business windows to show their Hardrocker spirit.

Gina Rossi, a civil engineering senior from Pueblo, Colo., and Jeremy Adams, a mechanical engineering senior from Sundance, Wyo., were crowned homecoming queen and king. Their court included:

- Ceri Koepsell, a civil engineering senior from Canova
- Natalie Schneider, a chemical engineering senior from Fort Collins, Colo.
- Jessica Wolf, an industrial engineering junior from Gering, Neb.
- Margaret Braasch-Turi, a chemistry senior from Owatonna, Minn.
- Harrison Costello, a geological engineering senior from Durango, Colo.
- Justin Brick, a metallurgical engineering senior from Aberdeen
- Marcus Dolan, a mechanical engineering senior from Johnston, Iowa
- Robert Olson, a mining engineering senior from Hulett, Wyo.

See photos on page 7

Enrollment Growth Continues While Graduate Programs Rise

Enrollment at the South Dakota School of Mines & Technology continues to rise, with an overall fall headcount of 2,843 students, a 1.6 percent increase compared to the fall 2014 semester.

The increase extends an upward trend for Mines, including a 6 percent growth last year and a 9 percent jump the previous year. The university has grown by 38 percent over the past seven years.

Enrollment for undergraduate students increased from 2,471 a year ago to 2,485 this fall, while the number of graduate students in 2014 totaled 327 and this year jumped to 358.

“The School of Mines is an exceptional engineering and science university. Our reputation is growing, and our graduates are in demand. Challenging curriculum, personal attention, a great internship program, and great value makes Mines a very good choice for students. There is a tremendous need for more engineers and scientists, and we are doing our part to meet that need,” said SD Mines President Heather Wilson.

Significant growth has occurred in the university’s doctoral programs, including the new Ph.D. in physics, which is closely aligned with the Sanford Underground Research Facility in nearby Lead, where worldwide collaborative research experiments are being conducted. In just its third year, the physics Ph.D. program has enrolled 20 students; meanwhile the undergraduate physics program has 45 students enrolled – a very large program compared with much bigger universities.

The fastest-growing program is the new applied biological sciences major, which, in its third year, has increased by 30 percent compared to a year ago, from 57 students last fall to 82 this year, and is projected to be one of the top five largest at Mines within a few years.

The largest program is mechanical engineering with 618 students, followed by civil and environmental engineering with 259 students, and chemical and biological engineering with 241.
Mines Launches $6M Renovation Project

A Sept. 30 groundbreaking for the $6 million renovation of laboratories and classrooms kicked off with a ceremony outside the southwest entrance of the Chemical and Biological Engineering/Chemistry Building on the Quad.

Last spring the South Dakota Legislature approved the sale of $6 million in bonds to fund renovation of 7,000 square feet for three research labs, one teaching lab, two support spaces and faculty offices. The project will also bring the 26,055-square-foot building into compliance with the Americans with Disabilities Act.

Construction will be complete by the fall 2016 semester.

The building is home to the Chemistry and Applied Biological Sciences (ABS) programs, with the south end of the building undergoing only minor upgrades since it was originally built in 1957. All Mines students are required to take chemistry, and the three-year-old ABS major is the fastest-growing program on campus, projected to be one of the largest, at 150 students, within a few years.
New research published by paleontologists at Mines reveals an herbivorous dinosaur from the Black Hills as more than 20 million years older than previously thought.

Findings published in the online journal *PeerJ* are significant because they could help piece together the evolutionary picture of the *Dakotadon lakotaensis* and its descendants.

New research by South Dakota Mines paleontologist Darrin Pagnac, Ph.D., and Clint Boyd, Ph.D., former Mines paleontologist now employed with the North Dakota Geological Survey, determined the dinosaur is between 135 million and 127 million years old, putting it in the geologic age of the early Cretaceous period, making it one of the earliest types of such dinosaurs known from North America.

The fossil housed at the university is the only *Dakotadon lakotaensis* specimen known to exist. *Dakotadon lakotaensis* is an iguanodont, a type of herbivorous dinosaur that lived throughout the northern hemisphere in the early Cretaceous period. Iguanodonts are characterized by an elongate, horse-like skull, robust hind limbs and shortened forelimbs with an immobile “spike” in place of a thumb.

The specimen was donated to the university’s Museum of Geology in the mid-1970s after Louis Rossow discovered it on his property east of Whitewood in an outcropping of the Lower Cretaceous Lakota Formation. In 1989, it was described as *Iguanodon lakotaensis* in a paper by David Weishampel and Philip Bjork, former Museum of Geology director. Subsequent work in 2008 revealed it to be a new genus, hence the new name *Dakotadon*.

The original site of excavation was relocated in 2014 with the aid of Rossow’s grandchildren. Relocation of the site helped Pagnac and Boyd determine the precise age of the specimen.

At the Paleontology Research Laboratory on campus, then preparator Mindy Householder conducted additional preparation and conservation, revealing new anatomy and other information not included in the original description.

Householder’s work exposed several new bones and revealed some bones that were previously misidentified. Extensive deformation due to fossilization processes in areas of the skull was also noted that influenced inaccuracies in prior descriptions and reconstructions, according to Pagnac and Boyd.

“Mr. Rossow discovered an exceedingly important specimen, the only of its type known worldwide. The cranial anatomy of *Dakotadon* is revealing a great deal about the evolution of these herbivorous dinosaurs between the late Jurassic and early Cretaceous periods,” said Pagnac.

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**Public Invited to Bring Rocks, Fossils to Museum for Identification**

Members of the public are invited to bring their interesting backyard rock or fossil finds to the South Dakota School of Mines & Technology’s Museum of Geology on Saturday, Oct. 17, for the third annual Rock and Fossil ID Day.

The event will be from 10 a.m. to 3 p.m. at the museum, third floor of the O’Harra Building on the SD Mines campus. There is no charge.

Paleontology staff and trained students from the Society of Economic Geologists, Tech Geological Association and Paleo Club will study and identify specimens.
The South Dakota School of Mines & Technology has been awarded a $312,928 grant from the National Science Foundation (NSF) for a project to improve intelligent control of sensitive systems such as an airplane’s autopilot and a power plant’s autonomous temperature controller, possibly preventing major catastrophes.

SD Mines research will produce performance guarantees for autonomous systems where errors can have catastrophic consequences. Examples include automatic machines controlling the flow of anesthesia during surgery and robotic manipulators whose miscalculations can destroy products or injure employees in a manufacturing setting.

Intelligent control is a human-inspired control method that achieves automation by emulating how people learn: act, look at the outcomes and then modify actions to improve outcomes. Intelligent control applies this method to solve challenging problems in aerospace vehicles, autonomous robots, power generators and grids, mechanical systems, electrical networks, chemical processes, bioengineering applications and economics.

“Since intelligent control does not require a perfect model of a process or system to automate with precision – just as people do not require a perfect model to operate machinery – it offers a superior performance compared to other methods even in the face of uncertainties prevalent in real-world problems,” said Ali Heydari, Ph.D., principal investigator and assistant professor, Department of Mechanical Engineering.

Despite the overall success of intelligent control, a shortcoming is that these sensitive systems require ironclad guarantees of suitable performance which are not typically provided using this class of controllers, said Heydari, whose research will mitigate this shortcoming by developing performance guarantees for delicate systems.

The NSF award for his project entitled, “Contributing to the Mathematical Rigor of Approximate Dynamic Programming,” will allow Heydari to hire three graduate and undergraduate students to assist in the research over a three-year period.
School of Mines graduate and former scholar-athlete Janelle Strampe has been chosen as a Top 30 finalist for the NCAA Woman of the Year Award.

The National Collegiate Athletic Association announced the Top 30 honorees from a record 480 school nominees. The selection committee chose 10 women from each of the three NCAA divisions and 12 different sports who demonstrate excellence in academics, athletics, community service and leadership.

South Dakota Mines competes in Division II. Strampe played for both the Hardrocker women’s volleyball and basketball teams.

The 2015 Woman of the Year, selected by the NCAA Committee on Women’s Athletics, will be announced Oct. 18 at a ceremony in Indianapolis.

In July, it was announced that Strampe, from Green River, Wyo., was named Rocky Mountain Athletic Conference (RMAC) Woman Athlete of the Year by the NCAA.

"Janelle is an exceptional scholar-athlete. This is a tremendous honor for her and for South Dakota Mines to be included among just 30 athletes nationwide who are finalists to be the NCAA woman athlete of the year," said SD Mines President Heather Wilson.

Now a first-year student at the University of Washington’s Medical School, Strampe earned a Bachelor of Science degree in chemical engineering in 2014 and a Master of Science degree in biomedical engineering in spring of 2015.

For the Hardrocker volleyball program, Strampe was a four-year starter and two-year team captain where she tallied career totals of 928 kills, 2,751 attacks, 40 aces, 720 digs and 145 blocks.

Strampe received a number of academic honors at Mines, including seven consecutive semesters on the Dean’s List, a Tau Beta Pi GEICO Scholar, a three-time SDSM&T Richardson Scholar, a four-time SDSM&T Presidential Scholar and the Air Force Outstanding Math and Science Award. Her GPA in the chemical engineering program was 3.976, and she received the four-year volleyball team academic award for highest GPA and the D2 Athletic Directors Association Academic Achievement Award.

Strampe’s other campus and community endeavors include a mission trip for Engineers & Scientists Abroad, job shadowing at Black Hills Orthopedic and Spine Center under Dr. Clark Duchene, M.D., and serving as volleyball representative of the Student Athlete Advisory Committee, vice president of Tau Beta Pi, and a member of Engineering Honor Society, Society of Women Engineers and PhiEtaSigma. Strampe also worked at Cornerstone Rescue Mission and Youth & Family Services.

Andersen Named S.D. Library Association’s Librarian of the Year

Patricia Andersen, director of the SD Mines Devereaux Library, has been named the SD Library Association’s Librarian of the Year. The SD Library Association includes all libraries in the state, public as well as those at both public and private universities and schools.

Andersen has served at the Devereaux Library since 1983 and as director since 1996. During her tenure, she has been a member of the SD Library Network advisory council, elected to its executive board for several terms. She also serves on the State Historical Records Advisory Board and is active on many federal depository groups.

In addition to her duties as a librarian, Andersen serves as the academic advisor for more than 100 SD Mines students, collaborating with faculty to develop specialized plans of library instruction for students in a variety of technical and scientific disciplines.

Frontiers in Education Recognizes Karlin with Helen Plants Award

School of Mines Professor Jennifer Karlin, Ph.D., has been awarded the Helen Plants Award by the Frontiers in Education (FIE) Conference, which is jointly sponsored by the Institute of Electrical and Electronics Engineers (IEEE) Education Society, the IEEE Computer Society and the ASEE Educational Research and Methods Division.

One of three FIE Conference Awards, the Helen Plants Award is given for the best special (non-traditional) session at the FIE Conference, as demonstrated by originality, session content and presentation including the use of written materials and visual aids and participation of session attendees.
Rocker Days
Vargas Named Hawkinson Foundation Scholar for Peace Initiatives

SD Mines senior Vaughn Vargas has been named a 2015 Hawkinson Foundation Scholar. One of seven Midwest students recognized for their peace and justice initiatives, Vargas was honored for his work reducing poverty in Native American communities and enhancing relationships between Native American and non-Native communities.

A member of the Cheyenne River Sioux Tribe, Vargas serves as the Cultural Advisory Coordinator for the Rapid City Police Department and as an Oceti Sakowin Community Ambassador. Vargas previously served on the board of directors of the Substance Abuse Prevention Coalition and speaks regularly to community organizations on youth suicide awareness.

Vargas received the prestigious national Udall Scholarship in 2014 and was named a Udall alternate in 2015. He was the first Mines student to receive the distinction, one of five prestigious, national scholarships established by the U.S. Congress and which honors students committed to careers related to the environment, tribal public policy or Native American healthcare.

He has also been named Mr. AIHEC (American Indian Higher Education Consortium) 2013, a National Science Foundation (NSF) Tiospaye and All Nationals AMP Scholar and a NASA Space Grant Recipient. Active in the American Indian Science & Engineering Society, Music Center Activities Club and Institute of Industrial Engineers, Vargas has also earned the American Indian Entrepreneurial Scholarship and completed an NSF Quality Education for Minorities internship. He will graduate in 2016 with a bachelor’s in industrial engineering and engineering management and a minor in occupational safety.

The Minneapolis and St. Paul-based Hawkinson Foundation annually recognizes and supports students with a passion for peace and justice. Since 1988, the Foundation has awarded scholarships to more than 137 students from or attending schools in Minnesota, Wisconsin, Iowa and North and South Dakota.

Learn more about the awardees or the Hawkinson Foundation at HawkinsonFoundation.org.

Apex Gallery Hosts Landscape Photographer

Local photographer Erica Harvey’s landscape and wildlife exhibit, “Majestic Moments,” opened Sept. 28 at the Apex Gallery on campus with an Oct. 2 reception and artist talk.

The exhibit features 21 landscape and wildlife images taken at national parks around the U.S. and Canada. Harvey’s use of rich color and subtle light give her images a stillness that allows the photograph to reveal itself slowly as it tells the story of national parks.

The exhibit runs through Oct. 30.

Mines hosts Buffalo Gals Round-Up to Celebrate Women in STEM

Mines hosted the Buffalo Gals’ September Round-Up in partnership with the university’s Women in Science & Engineering (WiSE) and Culture & Attitude Sept. 16, in the Paleontology Research Laboratory on campus.

The event celebrated women in science, engineering, technology and math (STEM) and featured a series of speakers, including Mines President Heather Wilson.

Buffalo Gals is a local civic organization dedicated to increasing the participation of women and underrepresented groups in STEM, encouraging mentorship to support women throughout their academic and professional careers and supporting efforts to retain women in the STEM workforce.

SD Secretary of State, Pennington County Prosecutor Inspire Students

SD Secretary of State Shantel Krebs met with Mines students Sept. 16 for National Voter Registration Day, sharing South Dakota voter statistics and urging students to make their voices heard at the polls, as part of a national get-out-the-vote effort.

In honor of Constitution Day, which also fell on Sept. 16, Pennington County State Prosecutor Will Williams spoke to students, faculty and staff on constitutional law and its importance and present-day impact. After earning a bachelor’s from Dickinson College in Carlisle, Penn., and a joint law degree and master’s of public administration from the University of South Dakota, Williams worked as a law clerk and a public defender. For the past two years, he has served as a prosecutor with the Pennington County State’s Attorney’s Office.

About Legacy News

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To submit news or story ideas or to subscribe to the email distribution list, please contact Dani Mason, public relations officer, at 605.394.2554 or at Danielle.Mason@sdsmt.edu. For more Mines news, visit news.sdsmt.edu
SD MINES INVITES YOU TO

COCKTAILS + chemistry

Join us for an evening of experimental cocktails made by mad mixologists and a chemistry show so mind-blowing it belongs in a blockbuster.
But trust us, we’re scientists—just don’t try this at home.

FRIDAY, OCTOBER 23, 2015
ADOBA HOTEL RAPID CITY
6 to 7 pm VIP + Sponsor Reception
7 to 9 pm Cocktails + Chemistry

Individual tickets $50
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