Cocktails + Chemistry Event Raises $20K for Student Scholarships

SD Mines raised nearly $20,000 for student scholarships during Cocktails + Chemistry, an evening fundraising event featuring a chemistry show of fire and ice, flair bartending and mixologist-made drinks. Net proceeds benefitted student scholarships.

Pictured on cover: American Chemical Society students and faculty show off a fiery experiment as part of the Oct. 23 Cocktails + Chemistry fund-raiser at the Adoba.

Over $1.4 Million in STEM Ed Grants Awarded to Mines

Mines has recently been awarded over $1.4 million in science, technology, engineering and math (STEM) education grants to better prepare leaders in science and engineering and share best practices with institutions worldwide.

Among the awards is one from the National Science Foundation (NSF) to pave the way for community service engineering projects on the Pine Ridge Reservation.

First-ever EPICS Program at SD Mines

Principal Investigator Jennifer Benning, Ph.D., Department of Civil & Environmental Engineering, has been awarded a $566,698 NSF grant to launch the Engineering Projects in Community Service (EPICS) program at SD Mines. Of the 23 EPICS universities worldwide, Mines will be the first to partner with a tribal college, Oglala Lakota College (OLC), and 50 percent of projects will meet critical needs on Pine Ridge.

The first EPICS project will focus on improving the greenhouse that Mines and OLC students designed and built last year. The EPICS program will also offer technical training and professional development.

Other team members include Christopher Shearer, Ph.D., Department of Civil & Environmental Engineering; Stuart Kellogg, Ph.D., Department of Industrial Engineering; and Andrea Surovek, Ph.D., Department of Mechanical Engineering.

Credentialing Innovative Engineering Education

Jennifer Karlin, Ph.D., Department of Industrial Engineering, has received a $343,499 NSF grant to study credentialing of innovative educational practices. Unless intentionally addressed, the systems that have defined, and are based on, degree credentialing can stifle innovation in engineering education. Karlin says engineering education must evolve as technology does, pointing to large-scale curricular changes as key to successful adaptation.

This study will analyze ongoing and completed large-scale innovative engineering education transformations across the country to determine best practices to support and sustain an infrastructure change.

Promoting System-Level Thinking in Undergraduate Engineering Courses

Principal Investigator Karim Muci-Kuchler, Mark Bedillion, Cassandra Degen, Marius Ellingsen and Shaobo Huang, all Ph.D. faculty members in the Department of Mechanical Engineering, have been awarded a $303,224 grant from the Office of Naval Research to incorporate educational activities that promote system-level thinking and deal with Navy- and Marine Corps-related applications in an undergraduate product development course.

Teaching Teamwork through Real-World Exercises

Principal Investigator Kevin Hadley, Ph.D., has been awarded a $184,275 NSF grant to teach teamwork through real-world exercises. For example, students could participate in a Center for Disease Control and Prevention team faced with a deadly pathogen, finding ways to contain the infection and develop cures before the spread of the disease becomes unmanageable.

Hadley says there is a large industrial need for better teamwork skills in STEM, but many courses lack formal teamwork training. Targeted to first-year engineering students, these exercises will develop skills in goal setting, task planning, communication and utilizing skill and intellectual diversity.

Hadley, Department of Chemical & Biological Engineering, will partner with Kyle Caudle, Ph.D., Department of Mathematics, chemical and biological engineering senior Laura Beckmann and co-investigator Ken Reid, Virginia Tech.

Finding Partnerships to Increase Participation of Women in STEM

Shaobo Huang, Ph.D., Department of Mechanical Engineering, has been awarded a $49,135 subaward as co-principal investigator on a multi-university NSF grant that aims to increase the recruitment, retention and promotion of women faculty in the STEM disciplines through innovative gender equity policies at the system level over five years.
Mines Plays Critical Role in Pioneering Research Across Two Continents

South Dakota School of Mines & Technology will play a key role in a new collaboration with nine universities on a wide-ranging study of how rivers support life with comparisons across two continents, particularly in changing climate conditions and with human influences.

Scott Kenner, Ph.D., of SD Mines, is among the co-principal investigators nationwide who were collectively awarded a $4.2 million National Science Foundation grant to study rivers in the North American Great Plains and in Mongolia to better understand large riverine “macrosystems.”

Scientists and students from the U.S.A and Mongolia will sample the structure and function of 18 rivers flowing through three major types of ecoregions – mountainous shrublands, short-to-tall grasslands and semi-arid shrublands.

Kenner, of Mines’ Department of Civil & Environmental Engineering, will focus specifically on geomorphological characterization, function and connectivity of the rivers, the influence of human perturbations such as dams, levees and riparian modification, and the influence of climate change. SD Mines will receive $262,000 of the $4.2 million project over the next five years.

As a Fulbright Scholar Kenner spent the 2012-2013 academic year teaching and researching in Mongolia. He initiated assessment and modeling research on the Orkhon River watershed and developed an assessment and modeling project on the Khangal River watershed.

Researchers will sample nine rivers in the U.S. Great Plains, Great Basin and Mountain Steppes. These include the Platte, Niobrara, Humboldt, Bear and Snake rivers, among others. In Mongolia, they’ll investigate nine rivers within similar ecoregions as those in the U.S.

Lead principal investigator James Thorp of the University of Kansas said that studies of each continent could reveal the future of the other: North American river systems, with their dams and presence of non-native fauna, could foreshadow the future of rivers in Mongolia; in turn Mongolia, which has “one of the strongest warming signals in the North Temperate Zone” could indicate changes U.S. rivers will undergo in a future of boosted temperatures.

Teams will sample differences among sites in system metabolism (fluctuations in oxygen production by algae and plants and consumption of oxygen by bacteria, algae, plants and animals); food webs (sources of organic energy, food chain length and food web structure); biodiversity traits of fish and invertebrates (for example, feeding groups like predators, herbivores, omnivores, etc.); and physical and biological characteristics of the riparian zone and basin.

The new project will provide research experiences and stimulate STEM program recruitment among underrepresented participants, particularly rural and Native American students.

Other co-principal investigators are Mark Pyron, Ball State University; Jon Gelhaus and Alain Maasri, Drexel University (Philadelphia Academy of Sciences); Walter Dodds, Kansas State University; Bazartseren Boldgiv, National University of Mongolia; Olaf Jensen, Rutgers University; Dan Reuman, University of Kansas; Sudeep Chandra, University of Nevada Reno; and Barbara Hayford, Wayne State College.

University of Kansas, the lead research institution on the project, has produced a video: https://www.youtube.com/watch?v=r_ey9PZ0KSY

New Baja Practice Track Opens

The Baja team unveiled a new practice track behind campus, redesigned to provide new challenges to help the team improve for competitions. Student members of the Baja SAE team worked throughout the summer to build track obstacles comparable to what they face in national competitions, leading to an improved design for vehicle performance and driver handling.
Coeur Mining, Inc. has committed $125,000 toward the Minerals and Energy Industries Center of Excellence at SD Mines and has pledged to double the amount if market prices of gold and silver rise within five years.

Coeur owns the Wharf Gold Mine near Terry Peak and has long been a supporter of the university and its mining engineering and management programs.

Installments of $25,000 will be made for each of the next five years, and Coeur said it will give an additional $125,000 if market prices of silver and gold average $20 per ounce and $1,400 per ounce respectively over the five year period.

The gift will support renovation and expansion of the current Mineral Industries Building that houses the Departments of Mining Engineering & Management, Geology & Geological Engineering, and Materials & Metallurgical Engineering. The project is estimated at $17 million and is expected to be completed in 2022.

“We thank Coeur for making this generous donation. Coeur’s presence in the Black Hills and its commitment to South Dakota Mines has been crucial to the success of our mining engineering program. We just can’t do a project of this magnitude without the help of industry partners,” said SD Mines President Heather Wilson.

Coeur is actively involved with the mining engineering and management program through guest lecture presentations and internship opportunities. Last summer, 20 percent of Coeur’s interns came from South Dakota Mines. “We are committed to South Dakota and SD Mines. Our contribution is an investment in the community and the future of our industry,” said Keagan Kerr, Sr. Vice President, Corporate Affairs and Human Resources.

Coeur’s Wharf mine is the only active large-scale gold mine operating in the Black Hills. The Chicago-based company is the largest U.S.-based primary silver producer and a significant gold producer with five precious metals mines in the Americas employing approximately 2,100 people.

SD Mines is one of only five universities in the United States that teach the three core minerals industry disciplines – economic geology, mining engineering and metallurgical engineering.

Gifts totaling more than $1.5 million from industry and anonymous donors have been announced this year to advance the university’s minerals and energy industries programs.

The South Dakota Board of Regents approved the development of a preliminary design of a renovated Minerals and Energy Industries Center of Excellence in June 2014. The Clark Enersen Partners Science & Research Design Group, an architectural firm in Kansas City, Mo., was selected for the project. The firm has already completed its preliminary feasibility assessment and is working on a programming and conceptual design study before creating detailed design and construction plans.

The updates to the center will enhance education, engineering design and research collaborations among the departments and industry partners while strengthening experiential learning and attracting diverse, high-quality students and faculty.

Mines, Regional Health, KOTA Partner for New Fitness Series

Bret Miguez, strength and conditioning coach for Mines’ athletics program and community partner Regional Health, is leading a new fitness series for KOTA Territory News.

Miguez is working with Good Morning KOTA Territory anchor and reporter Nicole Tschetter on the weekly segments called “Train Like A Champion.” The series launched Nov. 3 and will run each Tuesday.

Segments were shot on campus in locations throughout the new Stephen D. Newlin Family Student Wellness & Recreation Center and feature Miguez leading Tschetter through techniques targeting specific parts of the body, such as the core, arms and legs.

Miguez was hired in July as the first-ever strength and conditioning coach for Hardrocker Athletics through a new partnership between the university and Regional Health. He has extensive experience and knowledge in exercise physiology and strength training, having most recently served as an assistant strength and conditioning coach at the United States Air Force Academy in Colorado Springs, Colo., and in similar positions at other universities.

Miguez earned a master’s degree in applied health and sports science from Northwest Missouri State (Maryville, Mo.) and a bachelor’s degree in sports management with a minor in exercise health science from the University of Massachusetts Boston.

As an assistant strength and conditioning coach at the Air Force Academy, Miguez developed and monitored training programs for sports, traveled as a trainer with the women’s basketball and men’s boxing teams, assisted with certain sports training, instructed athletes on exercise techniques and advised on nutrition information.
Mines will host an open house for the new Women in Science & Engineering (WISE) Center from 10 a.m. to noon Thursday, Nov. 12, in McLaury, room 202, on campus.

“Women at Mines graduate at higher rates than our men students. Mines is a great school for women to become scientists, engineers, and, increasingly, for pre-health professions. This new center will continue our strong support of women on campus,” said Mines President Heather Wilson.

The WiSE program offers students monthly professional development programming, including speakers and panels of industry experts, conference support, outreach opportunities and a campus-wide mentorship program, which has been proven to be one of the most important confidence builders for women in science, technology, engineering and math (STEM) fields.

This year enrollment of first-time freshmen women increased 8.7 percent from 2014, and applications for next fall are up 5.8 percent from the previous year.

“A physical space for prospective and current women students, as well as women faculty, is an important component in breaking down barriers for women in STEM and connecting women faculty and students. We wanted to create a space for students to study, hang out, connect with each other and prospective students, attend small events and find resources,” WiSE Director Lisa Carlson said.

Online Graduate Programs Ranked Among Top 10 in New Surveys

New surveys have ranked Mines’ online graduate education programs among the nation’s top 10.

Value Colleges’ 2016 rankings of the Top 50 Best Value Online Graduate Engineering Programs placed Mines graduate programs as seventh nationally. The survey considers starting salaries, tuition and other rankings.

Mines offers three master’s degrees: Construction Engineering & Management, Engineering Management, and Mining Engineering & Management. Total enrollment has been growing and is at 110 this fall.

Affordable Colleges Online ranked the Construction Engineering & Management Program eighth nationwide in the Best Online Construction Management Degree 2015-2016.

Mines and other top institutions in the list were cited as providing “some of the best resources to students, including academic and career counseling services, affordable tuition and job placement services.”

The program is designed for working professionals who want to further their construction management careers. Topics of study include construction contracts, project management, advanced construction management, equipment management, construction company management and construction operations and sustainability. Available electives include safety management, business strategy, innovation and commercialization or ergonomics.

Enrollment has grown from four students in 2009 when the program began to 32 this semester and has graduated 44 professionals.

Susan Ray
Apache Corporation, Midland, Texas

A geological and civil and environmental engineering major, Susan Ray spent the summer working as a geological engineering intern. During her internship she gathered oil well data, created 3D models to help increase field production and visited a drill rig for the first time.

Intern Spotlight

Mines to Host Open House for New Women in Science & Engineering Center

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Brungardt Awarded SEMA Memorial Scholarship

Mines sophomore Skyler Brungardt was recently awarded a 2015 Specialty Equipment Market Association (SEMA) Memorial Scholarship.

Brungardt, a native of Sterling, Colo., plans to pursue a career in the aftermarket or restoration automotive disciplines after receiving his bachelor’s degree in mechanical engineering from Mines.

The SEMA Memorial Scholarship Fund awarded $150,000 to 58 individuals nationwide this year.
A trio of players from SD Mines’ soccer program have been selected for the 2015 Rocky Mountain Athletic Conference Men’s Soccer All-Academic First Team. Erik Fenske, Brandon Lind and Darin James all received the honor.

To qualify for Academic All-RMAC, student-athletes must have a GPA of 3.30 or better, be a starter or reserve and have completed two consecutive semesters or three quarters at their current institution.

The three SD Mines scholar-athletes had among the highest GPAs in the conference. Fenske, a junior chemical engineering major from Savage, Minn., led the field with a 3.98; while James, a sophomore metallurgical engineering major from Albuquerque, N.M., posted a 3.95 GPA; and Lind, a junior mechanical engineering major from Windsor, Colo., registered with a 3.96.

Three Mines Soccer Players Named to RMAC’s All-Academic First Team

Brandon Lind  Darin James  Erik Fenske

South Dakota Mines women’s volleyball scholar-athlete Jena Kreuzer has been named to the Rocky Mountain Athletic Conference Academic All-Conference First Team while Hardrocker teammates Mikkella Reese and Emily Newton received RMAC Honor Roll recognition.

To qualify for Academic All-RMAC, scholar-athletes must have a GPA of 3.30 or better, be a starter or reserve and have completed two consecutive semesters or three quarters at their current institution.

Kreuzer, a red-shirt junior, is an outside hitter from Westminster, Colo., majoring in mechanical engineering.

Kreuzer made the Academic All-RMAC First Team with a 3.843 GPA. she has been a three-year starter for the Hardrockers and so far this season has tallied 135 kills, 126 digs and 14 blocks.

Reese, a junior from Casa Grande, Ariz., is an outside hitter majoring in chemical engineering with a 3.367 GPA.

Reese also started the last three seasons and currently leads the Hardrockers with 216 kills, is second on the team with 223 digs and has notched 26 blocks so far this year.

Newton, a sophomore middle hitter from Loveland, Colo., is majoring in civil engineering.

Newton has collected 142 kills and is the second leading blocker for the ‘Rockers with 31 for the year.

Hardrocker Volleyball Players Receive Academic All-RMAC Honors

Emily Newton  Jena Kreuzer  Mikkella Reese

Buse, Friesen Bring Home 2015 RMAC Cross Country Summit Awards

Travis Buse and Libby Friesen of SD Mines were recognized as the RMAC 2014 Summit Award winners for men’s and women’s cross country.

The RMAC Summit Award is presented to the student-athlete with the highest cumulative grade point average participating at the finals sites for each of the RMAC’s championships.

“There are 16 schools in the Rocky Mountain Athletic Conference, and earning top academic honors for both men and women among the hundreds of student runners is high praise for Travis and Libby. It’s particularly impressive because academics are challenging at Mines. We’re very proud of them,” said SD Mines President Heather Wilson.

Buse, a senior chemical engineering major, has a 4.0 GPA and was the 2014 Summit Award winner and a USTFCCCA All-Academic Individual selection. Last year resulted in his best performance to date in an NCAA Regional Meet with a 61st-place finish overall.

Friesen is a sophomore civil and environmental engineering major with a 4.0 GPA from Olathe, Kan. Friesen is the school record holder in the indoor 5K and is in the school’s top five all-time in four different events on the track.
Halloween at Mines

Halloween was busy at South Dakota Mines, as the Museum of Geology hosted the eighth annual “Night at the Museum” with hands-on educational activities and games, and tailgating at the football game featured “Trunk or Treat” for families. Circle K also collected nearly 1,100 pounds of canned goods for Feeding South Dakota during its annual “Trick or Treat for Canned Goods.”
The South Dakota School of Mines & Technology has opened its newest exhibit, “American Nocturne,” by Spearfish artist Tim Peterson at the Apex Gallery on campus. There will be a closing reception from 5-7 p.m. Friday, Dec. 4, with an artist talk at 6 p.m. in the gallery.

Peterson’s work depicts the random, small dramas that occur in the routine course of daily life. “American Nocturne” focuses on these moments after the sun goes down. The 15 pastels on display share a similar, dark palette with an accompanying air of mystery, inherent to the night.

Peterson is originally from Minot, N.D., and attended Northern State University in Aberdeen, where he received his bachelor’s degree. Peterson lives and works in Spearfish.

Mines Hosts Mineral Industries Day

At Mineral Industries Day, Mines offered students and the public the opportunity to learn about geology, geological engineering, mining engineering and metallurgical engineering.


Among the technical sessions:

• Cargill: How to Build a Strong Safety Culture
• Copper Processing Challenges at Freeport McMoRan
• Freeport McMoRan: Molybdenum Processing
• Overview of Cloud Peak Energy and the Coal Industry
you’re invited

WOMEN IN SCIENCE & ENGINEERING CENTER

OPEN HOUSE

Thursday, November 12, 2015
10 am to Noon, McLaury 202