Mines Day to be Held at the SD State Capitol Feb. 5

The South Dakota School of Mines & Technology will host Mines Day at the South Dakota State Capitol Rotunda from 9 a.m.-4 p.m. Friday, Feb. 5.

The day-long event will feature a variety of interactive demonstrations, hands-on activities and informational booths. Legislators, the public and media are invited to attend.

Exhibits will feature liquid nitrogen ice cream, virtual reality goggles, 3D doodlers, and information on economic development, Women in Science and Engineering, American Indian Science & Engineering Society and the Career & Professional Development Center.

Information about scholarships for summer camps, ranging from forensics and fossils to entrepreneurship and explosives, for Pierre-area high school students will also be available.

ON THE COVER

SD Mines Campus Ministries delivers hot cocoa to student groups volunteering during the Martin Luther King, Jr., Day of Service, where they collected canned food and cash donations for Feeding South Dakota and the SD Mines Student Food Pantry.

See the story on page 3.

Mines among Elite Nationwide Qualifying for World Finals in Thailand

The ICPC has asked Rapid City to host the World Finals in 2017.

South Dakota Mines has advanced to the World Finals of the International Collegiate Programming Contest (ICPC) to be held in Phuket, Thailand, in May. With only 25 teams nationwide invited, SD Mines will be in rare company to compete alongside universities such as Cal Tech, Carnegie Mellon, Cornell, Harvard, MIT and Stanford in what is known as the Olympics of Computer Science.

It is the sixth time SD Mines will have represented the U.S. at the World Finals. In all this year, just 2 percent of the more than 1,000 teams competing nationwide were invited to Thailand.

This year’s World Finals team from South Dakota Mines is comprised of Rachel Krohn, Daniel Andrus and Matt Dyke. Krohn, a graduate student in the Computational Sciences & Robotics program from Littleton, Colo., is the first female from SD Mines to qualify and the second female ever from the North Central Region, the largest in the United States. Andrus, a senior computer science major from Spearfish, will graduate in May and immediately start work at Google. Dyke is a junior computer science major from Sioux Falls.

No other university Mines’ size has qualified for the World Finals six times, according to advisor Edward Corwin, Ph.D. He and Antonette Logar, Ph.D., were honored in St. Petersburg, Russia, in 2013 with a lifetime achievement award for taking five teams to the finals. Corwin, Logar, Larry Pyeatt, Ph.D., and Roger Schrader coach the team.

“This is a great achievement for our students and a testament to the quality and dedication of our faculty coaches,” said Heather Wilson, president of SD Mines. “Only a handful of universities in America are consistently achieving at this level. We are a top-tier computer science school offering personal attention at a price families can afford. We are very proud of this team.”

The level of skill demonstrated by School of Mines students is attracting attention from the likes of Microsoft, according to Kyle Riley, Ph.D., head of the math and computer science department. Microsoft’s Fargo, N.D., office founded a scholarship for programming team members in hopes they’ll join the ranks of Mines alumni and interns who have gone to work for the software giant, he said.

This year, 223 teams competed from the North Central Region of the ICPC, which covers South Dakota, Minnesota, Iowa, Kansas, Nebraska, North Dakota, western Michigan, western Ontario and Manitoba. The competitions at both the regional level and the World Finals are designed to assess coding, testing and algorithm development skills, as well as math skills and the ability to work as a team.

The ICPC has asked Rapid City to host the World Finals in 2017.
Professor & Alumna Win Prize for Putting *Hunger Games* in the Classroom

SD Mines Assistant Professor Kyle Caudle, Ph.D., Department of Math & Computer Science, and Mines alumna Erica Daniels, have been selected for the 2015 Peter Holmes Prize, which honors the article with the best classroom idea in the *Teaching Statistics Journal*.

Their award-winning article was entitled “Did the Gamemakers Fix the Lottery in the Hunger Games?” The Hunger Games is an annual event in the fictional country of Panem, from Suzanne Collins’ book of the same name, in which 24 children are chosen by lottery from 12 districts to fight to the death for the entertainment of Capitol citizens. Using statistical analysis and computer simulations, Caudle and Daniels explored the possibility that the gamemakers, those in charge of planning the Hunger Games, fixed the lottery. Using this fictitious data, Caudle and Daniels show how students can learn how to perform a permutation goodness of fit test, which is a way to test if the data fits well with a given assumption, i.e. the lottery is rigged or random.

A 2014 Mines graduate in applied and computational mathematics, Daniels now works as a statistical analyst in Carmel, Ind., for United Actuarial Services, which specializes in actuarial consulting for multi-employer health plans.

The Peter Holmes Prize stresses the ongoing importance of practical classroom ideas. Founded in 1979, *Teaching Statistics* is an international journal that focuses on research in statistical education.

Tim Neese
Electrical Engineering Junior

A veteran and electrical engineering junior, Tim Neese has completed two internships with National Security Technologies (NSTec) at Los Alamos National Laboratory and will head back this summer for his third. Pictured is Neese next to a Photon Doppler Velocimeter. For explosive experiments, he can collect light at a very high rate of speed, which allows him to track the particulates moved by the explosion.

Mines Mobilizes Area Residents to Serve

Several SD Mines student groups volunteered on the Martin Luther King, Jr., holiday, collecting 2,244 lbs. of food and cash donations at local grocery stores and joining hundreds of thousands of Americans across the country in volunteer service.

The annual event honors Dr. King’s legacy and is an opportunity for Rapid City residents to renew their own personal vows of citizenship through service to others.

Donations went to Feeding South Dakota and the SD Mines student food pantry and were joined by an additional 200 lbs. of food collected during an earlier campus food drive.

Student organizations that participated were: Rotaract, Circle K, American Indian Science and Engineering Society, National Society of Black Engineers, Delta Sigma Phi, Triangle, Student Association Senate, Professional Development Institute, Lambda Chi Alpha, Weather Club, Society of Physics Students and Residence Life.

This year the SD Mines American Society of Civil Engineers will borrow the canned food donations to build the club’s entry into the Feeding South Dakota Canstruction event to be held Saturday, Feb. 20, at the Rushmore Mall.
Nine Basketball Players Earn RMAC All-Academic Honors

Nine South Dakota School of Mines men's and women's basketball scholar-athletes received Rocky Mountain Athletic Conference All-Academic honors Monday, with two Hardrockers earning first-team honors and seven being named to the RMAC Honor Roll list for the 2015-16 season.

On the women's side, Megan Rohrer, a junior from Greenwood Village, Colo., majoring in industrial engineering, earned a spot on the RMAC Women's Basketball Academic First Team with a GPA of 3.81.

Seniors Alexis Long and Devyn Asche, along with sophomore Krista Showalter, were named to the RMAC Women's Basketball Honor Roll. Long is a chemical engineering major from New Hope, Minn., with a 3.67 GPA; Asche is a civil engineering major from Glendive, Mont., with a 3.57 GPA; and Showalter is an industrial engineering major from Arlington, Wash., with a 3.84 GPA.

“We have some quality scholar-athletes in our program,” said SD Mines women's basketball head coach Ryan Larsen. “Balancing academics with athletics can be challenging, but balancing both at a high level is truly impressive. I’m extremely proud of these girls and happy they are getting the recognition they deserve.”

On the men's side, Konor Kulas, a junior from Appleton, Wisc., majoring in industrial engineering, earned a spot on the RMAC Men's Basketball Honor Roll.

Seniors Phil Schanilec and Justin Schock, along with juniors Joe Newkirk and Tyler Schoening and redshirt freshman Sterling Winzel, were all named to the RMAC Men's Basketball Academic Honor Roll.

Schanilec is a civil engineering major from Forest River, N.D., with a 3.76 GPA; Schock is a mechanical engineering major from West Fargo, N.D., with a 3.69 GPA; Newkirk is a mechanical engineering major from Layton, Utah, with a 3.54 GPA; Schoening is a mechanical engineering major from Sydney, Neb., with a 3.30 GPA, and Sterling is a mechanical engineering major from Austin, Texas, with a 3.67 GPA.

“We set our standards high in our program,” said SD Mines men's basketball head coach Jason Henry. “And to consistently have guys measure up to those standards is quite a feat. It's great to have all these scholar-athletes earn these type of accolades from their hard work and efforts.”

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.

“Athletes at South Dakota Mines have a higher GPA than the student body as a whole. They are truly scholar-athletes,” said SD Mines President Heather Wilson. “We’re very proud of these young men and women, and we will continue to cheer them on in the classroom and on the court.”

The student-athlete's cumulative GPA is what she or he had earned prior to basketball season beginning. All RMAC Sports Information Directors selected the first team.

Freshman Named American Chemical Society Scholar

SD Mines chemical engineering freshman William Trevillyan, from Brandon, has been named an American Chemical Society (ACS) scholar.

ACS awards renewable scholarships to underrepresented minority students who want to enter chemistry or related fields, as well as pairs scholars with a mentor from university faculty, industry or minority advocacy organizations, such as the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers. Scholars are chosen based on academic record, career objective, financial need, leadership ability, participation in school activities and community service.

Trevillyan is also a member of the American Indian Science and Engineering Society on campus.

To date, 2,679 students nationally have received a scholarship through the ACS Scholars program.

U.S. Citizenship & Immigration Leader Speaks on ID Security & Printing at SPACT Seminar


The Center for Security & Anti-Counterfeiting Technology (SPACT) was established in 2014 by researchers from South Dakota Mines, the University of South Dakota and South Dakota State University to facilitate research efforts to thwart counterfeiting.

Division Chief Jared Goodwin joined USCIS in 2008 in the Office of Information Technology, eventually becoming the lead IT project manager for the USCIS Fraud Detection and National Security Directorate.

In 2012, he became the chief of the USCIS Document Product Division. In 2013, his division was renamed the Document Management Division, when he assumed the additional responsibilities for the printing, inventory management and distribution of all USCIS public use and secure forms.

Goodwin attended the U.S. Naval Academy and was commissioned as a naval officer in the cryptologic career field. His duty assignments took him to Fort Meade, Pearl Harbor, the Persian Gulf, Norfolk, Bahrain, Qatar and Afghanistan.

Goodwin also holds a master's degree in National Security and Strategic Studies from the United States Naval War College.

The division chief of the document management division at U.S. Citizen and Immigration Services spoke on "Enabling the American Dream – An Overview of U.S. Citizenship and Immigration Services’ (USCIS) Secure Identification Document and Printing Program" at a presentation sponsored by the Center for Security & Anti-Counterfeiting Technology.

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Alumnus Fred Schilplin was a non-traditional student at South Dakota Mines, so it’s only natural that his professional career path would follow suit.

After graduating in 2013, Schilplin worked as a production engineer at the Wharf Gold Mine in Lead. But these days the 38-year-old father of four can be seen on television leading an international motley crew exploring for precious stones in hand-dug artisan mines scattered throughout the world.

“Mine Hunters,” a new weekly documentary-style reality show on the National Geographic Channel, so far has taken Schilplin and company to six continents in six months.

His mining engineering degree plays a big role on the show, and Schilplin is referred to as “the brains.” Rounding out the on-site crew are an underground miner, a blaster/panner and a mechanic from America, Australia and the United Kingdom.

Their mission each week is organized, mostly from afar, by Guy Clutterbuck, a renowned international gemologist from the United Kingdom who uses his leads to get permissions from families or small groups to assist locals at their artisan mines. “It’s exactly what you’d think old-time miners were doing here in the Black Hills with their hand picks and shovels,” Schilplin says.

The show’s premise is for the miners to find at least enough gems to resell to pay for their next adventure.

“We are definitely on a budget and we sleep wherever we can. We are looking for all sorts of gems, basically everything but diamonds. Essentially, we fund our way to get to these places, finding gems to make money to go on to the next one,” says Schilplin, a Spearfish resident who has been back in the states since late fall.

The show initially filmed eight episodes, and crew members are eagerly awaiting ratings to see what the future holds. Episodes that have aired or have been announced thus far are “Colombian Emeralds” (Jan. 19), “Seven Sapphires” (Jan. 26), “Blood Red Rubies” (Feb. 2), “King Sapphire” (Feb. 9), “Dynamite Garnet” (Feb. 16), and “African Aquamarine” (Feb. 23).

The crew has mined in Madagascar, Colombia, Sri Lanka and Greenland, among other places.

Schilplin credits SD Mines – one of just 14 universities in the United States offering a mining engineering degree – for preparing him for a versatile career and connecting him with this new opportunity. The mining department had been contacted by a production company from England looking for a recent gold mining engineer. Multiple Skype interviews and an on-camera video interview in Rapid City eventually led to Schilplin’s new international gem-hunting adventures.

“It has been amazing. We put ourselves in some pretty precarious situations for sure. We aren’t world travelers and these are not highly populated areas, so the risk factor is always a lot higher than it might otherwise be,” Schilplin says. “But it’s a big and interesting world out there, and there is a lot to see.”

Far from fancy hotels and studio luxuries, Schilplin has slept in tents, hostels, even under the stars in Africa.

The inherent dangers of mining don’t disappear just because the television cameras are filming. The miners’ efforts are real, and not everything is a success. In just one episode alone, a mine wall caved in due to excess water, the group’s vehicle was stolen, and Schilplin experienced a loss of oxygen and difficulty breathing after being hoisted about 30-35 feet below the earth’s surface into a hole the diameter of a garbage can.

“It really does speak to all the different opportunities and areas that you could go into,” Mining Department head Lance Roberts, Ph.D., says of career options that can range from managing an active large-scale mine to research that ensures mine wall stability to construction of underground laboratories.

Mine Hunters airs Tuesday evenings at 8 p.m. Mountain Standard Time on the National Geographic Channel. Check your local listings for the exact channel. Clips and full episodes may be found online at National Geographic Channel or YouTube.

View National Geographic promotional photos.
Boeing, Caterpillar Professionals Network with WiSE Students

The South Dakota School of Mines & Technology hosted a Women in Science & Engineering (WiSE) Forum dinner with a panel discussion featuring women from Boeing, Caterpillar Inc., Maptek, the South Dakota National Guard and Black Hills Surgical Hospital. The 80 students in attendance had the opportunity to network with their colleagues and female science and engineering professionals from throughout the community.

The forum was co-hosted by SD Mines WiSE and Rapid City’s Professional WiSE group and sponsored by Black Hills Surgical Hospital.

Dance Team to Host 2nd Annual Youth Camp

The Hardrocker Dance Team will host its second annual youth dance camp on Saturday, Feb. 13, at the Wellness Center on the SD Mines campus.

Camp times for 4th and 5th grades will run from 8-10 a.m. followed by 2nd and 3rd grades from 10:30 a.m. to 12:30 p.m. Participants will perform at halftime of the 3:30 p.m. SD Mines women’s basketball game versus Colorado Mesa University.

The $20 registration fee will include a T-shirt and admission to the game for the camp participants. Parents should purchase game tickets at the door. Scholarships are also available.

To reserve your child’s spot, email name, shirt size and grade to vanesa.gomez@mines.sdsmt.edu. Registration is limited to first 36 reservations.

Mines Team Advances in Mining, Metallurgy International Competition

A South Dakota School of Mines & Technology mining design team is among the top six collegiate groups from around the world qualifying to advance in a prestigious international competition.

The South Dakota Mines team will compete in the annual National Stone, Sand and Gravel Association (NSSGA) Design Competition to be held in Phoenix later this month during the annual Society for Mining, Metallurgy & Exploration’s conference and expo.

Teams are presented a real-world mining engineering problem focusing on the aggregates industry and will use actual data to present a solution. They will be evaluated on the engineering parameters presented in their final reports, along with financial soundness, environmental and safety considerations and the ability of the team to sell their conclusions.

SD Mines students, all seniors, competing are Shelby Allen, a geological engineering and atmospheric sciences double major from McCook, Neb.; James Curl, a mining engineering management major from Belle Fourche; Paul Jewell, a mining engineering management major from Sillwater, Minn., Sam Middelstadt, a mining engineering management major from Pavillion, Wyo.; Kathleen Tew, a mining engineering management and geological engineering double major from Pueblo, Colo.; and Austin Trout, a mining engineering management major from Freeburg, Ill.

Other teams qualifying to compete at the next level with the South Dakota Mines team are two groups from Virginia Tech and one each from West Virginia University, University of Nevada, Reno, and the Indian Institute of Technology, Kharagpur.

Andrea Brickey, Ph.D., from the Department of Mining Engineering & Management, is faculty advisor.

Mines Raises $20K for United Way

Mines raised $20,042.88 for United Way, surpassing its campus goal of $20,000. The campus effort is part of a larger United Way campaign to raise over $2 million to help 55 nonprofit organizations throughout the Black Hills.

The campaign is one of many community service initiatives Mines engages in throughout the year, the largest being the Freshmen Day of Service. Held annually in late summer, nearly 500 Mines freshmen head to neighborhoods and service organizations to clean, restore and assist with projects. Last year, the freshman class volunteered more than 800 hours of community service before they sat in their first hour of class.
Nearly 100 Newell Students Get a Taste of Mines

Nearly 100 students from Newell High School traveled to the South Dakota School of Mines & Technology for a day of science and engineering. Students attended personal and professional development sessions with Heather Wilson, South Dakota Mines president, and Jay Pfeiffer, Career & Professional Development Center, and joined the Hardrocker Dance Team for an afternoon dance workshop.

They also toured campus and the Center of Excellence for Advanced Manufacturing & Production, which features engineering teams including Formula racing, Baja, aero design, concrete canoe, supermileage car and more.

Leadership Conference Features Innovation, Entrepreneurship Sessions

Seventy-five students attended the SD Mines Professional Development Institute Spring Leadership Conference Jan. 23, on campus.

Beth and Merle Symes, founders of The Provenance Group, a consulting firm specializing in strategic innovation, spoke on failure, resiliency and innovation during their keynote address. Mines alumnus Merle Symes has served as president and CEO of Ulrich Medical USA and held positions at Bausch & Lomb, Wyeth, Monsanto and DuPont. Beth Symes has partnered with organizations such as the London Business School and gained managerial experience in the pharmaceutical, airline and hospitality industries.

The keynote was followed by breakout sessions in finance, civic engagement, entrepreneurship, work/life balance, mentorship and mastering LinkedIn. There was also a recent graduate panel featuring Mines alumni who are working at Black Hills Corporation, RESPEC and the S.D. National Guard.

Simonsen Announced as New Alumni Director

The SD Mines Alumni Association Board of Directors has announced that professor emeritus Larry Simonsen, Ph.D., will become the new director of the Alumni Association. Simonsen, a 1969 electrical engineering graduate, will fully transition from his role as a development officer at the SD Mines Foundation and join the Alumni Association by April 1.

Simonsen was a faculty member in the Department of Electrical & Computer Engineering for 32 years, including four years as department chair. He was the 2003 recipient of the Guy E. March Medal denoting his service and positive interactions with the university, students and alumni. He has also served as the national president of Tau Beta Pi, the engineering honor society.

“We are very pleased to have Larry join the SD Mines Alumni Association as director. Larry brings a long history with the college and has strong connections to our alumni. We are looking forward to working with Larry to continue strengthening our Alumni Association,” said Alumni President David Berg, a 1973 graduate in the mechanical engineering program.

Legislative Crackerbarrels Hosted on Campus

The 2016 legislative crackerbarrels will be Saturdays, Feb. 20 and March 5 on the South Dakota School of Mines & Technology campus. Each event will run from 9-11 a.m. in room 204 of the Classroom Building and will feature five-minute presentations by area legislators, followed by a question-and-answer period with the public.

The following is a schedule of when state lawmakers will present:

- **February 20**
  - Senator Alan Solano
  - Representative Lynne DiSanto
  - Representative Scott Craig
  - Representative Brian Gosch

- **March 5**
  - Senator Bruce Rampelberg
  - Representative Kristen Conzet
  - Representative Mike Verchio

The crackerbarrels are hosted by the Governmental Affairs Committee of the Rapid City Area Chamber of Commerce and are open to the public.

Geological Society of America Awards Student Best Poster

Mines master’s student Brooke Long has won a Geobiology & Geomicrobiology Division Student Poster Award at the Geological Society of America’s meeting.

Her presentation explored thesis research examining shape changes in clam shells between different environments.

“Seagrass rarely preserves in the fossil record, so by looking at shape of these lucinid clams in the fossil record, we could determine the temporal and spatial extent of seagrass and how long these clams have inhabited seagrass. Understanding this system in the past will help us understand it in the present and how to conserve seagrass ecosystems along our nation’s shores,” Long said.

Established in 1888, The Geological Society of America has more than 26,000 members.

About Legacy News

*Legacy News* is produced by the Office of University Relations the first Wednesday of each month. The newsletter is a compilation of news releases, photos and Web articles.

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

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