

South Dakota School of Mines & Technology

Legacy News

February 2014



SOUTH DAKOTA

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Mines to join Rocky Mountain Athletic Conference

The School of Mines has been accepted as a full member of the Rocky Mountain Athletic Conference (RMAC).

An invitation was extended to the university during an RMAC presidents' meeting at the National Collegiate Athletic Association (NCAA) National Convention in San Diego after several months of behind-the-scenes discussions and a presentation by Mines President Heather Wilson in San Diego.

"The RMAC is the natural fit for Mines and opens great opportunities for our athletes to compete in a regular schedule against traditional rivals in our region, and it'll be a joy to host these regional opponents in our great community," Wilson said.

The RMAC currently competes in 22 NCAA Division II sports and has earned 51 NCAA championships and 42 national runners-up since 1992. Founded in 1909, the RMAC is the most historic conference in the western United States.

The School of Mines is currently in its first year as a full member of NCAA Division II athletic competition.

"The RMAC is pleased that the South Dakota School of Mines has accepted our invitation to join the conference," said RMAC Presidents' Council Chairman Stephen Jordan. "Mines is a great fit academically and athletically with the fourteen members of NCAA Division II's most historic athletic conference."

In October, when Mines announced it was delaying the search for a new athletic director, President Wilson moved forward quietly in her efforts to find a conference home for the Hardrockers. Wilson, Interim Athletic Director Tiffany McCampbell and volunteer Tom Mahon secured an invitation to discussions with the RMAC in November. Wilson traveled to Denver to meet with RMAC counterparts and personally engaged the RMAC presidents. Mines submitted a formal written application in early January.

"A lot of people have worked very hard for over four years to get us to this day, and I very much appreciate it," Wilson said.

The Hardrockers are currently competing as an independent in all sports except men's soccer and football, which have affiliation agreements with the Great Northwest Athletic Conference (GNAC) that cover one more season for soccer and two more seasons for football. While the timing for scheduling purposes is still under discussion, all of Hardrocker sports will join the RMAC.

"This means less time on the road away from class, more home games for Rapid City fans, post season play for conference championships against historic rivals, and yet another reason for scholar athletes to come to Mines," Wilson said.

Students to help enhance Ellsworth's combat readiness



A new initiative between the South Dakota School of Mines & Technology and Ellsworth Air Force Base will allow engineering students to collaborate with the 28th Bomb Wing on mutually beneficial projects aimed at enhancing combat readiness.

School of Mines Provost and Vice President for Academic Affairs Duane Hrcncir, Ph.D., and Col. Kevin B. Kennedy, 28th Bomb Wing commander, signed the agreement Jan. 30. The goal of the work by Mines students in the Department of Industrial Engineering is to ultimately improve design, usage and efficiency of Ellsworth missions.

"Mines is well known for our hands-on, real-world approach to teaching engineering. Almost all of our students are required to do senior projects to earn their degree. We look forward to having more of our students solve problems for Ellsworth through this agreement. This partnership with the base reflects our strengthening relationship intended to solve problems, reduce costs and increase combat readiness for the Air Force," said Mines President Heather Wilson, herself a 1982 U.S. Air Force Academy graduate and former Air Force officer.

The signing was part of a historic partnership agreement between Ellsworth and several other area organizations, including the cities of Box Elder and Rapid City. This new initiative follows the Community Partnership Initiative passed by Congress with the intent of leveraging military installation and local community capabilities and resources to reduce costs in support of the Air Force mission.

"The core principle behind our public-private partnerships initiative at Ellsworth is to find areas that benefit both parties and enhance our combat readiness, either directly or indirectly. The initiative we are starting with the South Dakota School of Mines & Technology and the 28th Civil Engineer Squadron is an excellent example. We will benefit by being able to leverage their expertise for projects we need to accomplish across the base, while the Mines students will

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New Rocker Square lease to ease housing

The South Dakota School of Mines & Technology has entered into a long-term agreement with Technology Housing, LLC, to lease the two Rocker Square apartment buildings to accommodate its growing enrollment.

Beginning Aug. 15, the university will operate the privately owned apartment buildings through the Office of Residence Life and continue the arrangement through 2024. The agreement was signed in January by Mines President Heather Wilson and Hani Shafai, president of Dream Design International, along with Pat Hall, who own the Technology Housing management group.

The apartments, which were completed in time for the academic years beginning in 2012 and 2013, can accommodate 269 students. The adjacent twin buildings just west of campus currently house students but are operated independently of the university.

Under the agreement, the apartments will be reserved for Mines sophomores, who, along with freshmen, are required to live on campus.

The university owns three traditional residence halls, with a total of 605 beds, which will primarily serve a growing freshman population. This academic year the number of freshman grew 20 percent over the previous fall, with a total of 553 students from 35 states.

This year's overall enrollment grew 8.9 percent, with an overall student headcount of 2,640. One of the university's strategic priorities is to increase the number of students to 3,500 by the year 2020.

Students will have four-bedroom, three-bedroom and two-bedroom options from which to choose. Units are fully furnished, with kitchen, living room and multiple bathrooms. Each Rocker Square apartment building will house three resident assistant students.

The university is working to bring a storefront eatery to the currently vacant main floor space of Rocker Square I.

'Angel' partnership could help turn business dreams into reality

Entrepreneurs in the Rushmore region have a new resource to help them take their concept from dream to reality.

The Rapid City Economic Development Partnership, in conjunction with the South Dakota Enterprise Institute (EI) and its regional economic development allies, is launching Black Hills Regional Angel Fund, LLC, which will provide financial resources for local startup companies that exhibit potential for growth and high economic impact.

"This angel fund will allow us to provide local entrepreneurs with startup capital so they can secure additional funding resources to get off the ground," said Benjamin Snow, president of the Rapid City Economic Development Partnership, which is located on the School of Mines campus. "We've operated our grant and loan program with much success, and this gives us another important economic development tool to encourage the growth of small businesses."

Black Hills Regional Angel Fund, LLC, is completely funded with local money from accredited private investors in the Black Hills and will be used for companies wanting to start in Rapid City and the surrounding Rushmore region.

The South Dakota Enterprise Institute, a South Dakota non-profit entrepreneur development company, organized the fund and will help administer it.

"Having early stage money is one of the keys to spinning technologies out of the School of Mines and into companies that create good jobs," said School of Mines President Heather Wilson. "We are very pleased that there will be angels focused on the Black Hills."

To date, Black Hills investors have contributed more than \$2 million to the fund but Snow is hopeful they will raise another \$1 million in the coming weeks and months.

Entrepreneurs in the region that need investment capital are encouraged to apply by contacting the Rapid City Economic Development Partnership at (605) 343-1880, the Small Business Development Center at (605) 394-5311 or the Enterprise Institute at (605) 697-5015.

Museum of Geology reopens after renovation



The Museum of Geology will reopen today, Feb. 5, following a month-long ceiling renovation in the main exhibit hall.

The museum will host a reopening event from 10:30 a.m.-4 p.m. Saturday, Feb. 8, featuring a rock and fossil ID table. Black Hills area residents are invited to bring their backyard treasures to be identified by geology students from the Paleo Club, the Society of Economic Geologists campus chapter and the Tech Geological Association. There will also be a drawing for prizes.

Located on the third floor of the O'Harra Building on the School of Mines campus, the museum is home to extensive collections of fossil and mineral specimens from South Dakota and throughout the world.

Normal business hours during the winter are 9 a.m.-4 p.m. Mondays-Fridays and 10 a.m.-4 p.m. Saturdays. The museum is closed on Sundays and holidays. Admission is free. Call (605) 394-2467 for details.

Hardrockers sweep 'Basket Brawl'



Engineers Week features new Mines Myth Busters event for public



The 2014 National Engineers Week will be celebrated at the School of Mines Feb. 18-23 and will feature events for university students, hundreds of area middle and high school students and the general public alike.

As many as 600 middle or high school students could converge on campus for tours and demonstrations by academic departments, a visit to the Museum of Geology and a NASA presentation. Additionally, several events are open to the general public this year, including a first-ever Mines Myth Busters experiment, a chemistry magic show, the NASA talk and a dodge ball fundraiser for student engineers.

The public is invited to Mines Myth Busters from 6-7 p.m. Tuesday, Feb. 18, in the McKeel room of the Surbeck Center when Mines professors and students will not just talk about curiosity-driven research, they'll show it with hands-on demonstrations. The event is free.

Luke Corwin, Ph.D., of the physics department, Justin Meyer, Ph.D., of the chemistry department, and Anthony Kulesa of the civil engineering department will present myths

and attempt to prove or disprove them with Mines' signature twist of explosive experimentation.

The public is also invited to the Thursday, Feb. 21, chemistry magic shows at 9 a.m., 10 a.m. and 11 a.m. in the lecture hall of the Chemistry Building, room 2228, which will feature experiments involving chemicals that create colorful smoke and flames.

Tom Durkin, deputy director and outreach coordinator of the South Dakota Space Grant Consortium headquartered at the School of Mines, will lead a presentation, "Curious about Curiosity? NASA's Mars Science Laboratory Mission," at 1 p.m. Thursday, Feb. 21, in the Surbeck Center ballroom.

Also new this year is a Saturday, Feb. 22, ASCE dodge ball tournament at 10 a.m. in the King Center. The tournament is for four age brackets – elementary, middle school, high school and adult – and is a fundraiser to help the Mines student chapter of the American Society of Civil Engineers raise funds to travel to the 2014 Regional Conference. Team entries are \$30 for

early registration or \$45 for day-of registration. T-shirts are also being sold for \$10. For details, contact Ben Wolf at (308) 631-2618 or ben.wolf@mines.sdsmt.edu

E-Week Highlights

Tuesday, Feb. 18:

- Order of the Engineer Luncheon, 11:30 a.m., Ballroom, Surbeck Center
- Mines Myth Busters, 6-7 p.m., McKeel Room, Surbeck Center

Wednesday, Feb. 19:

- South Dakota Engineering Society Luncheon, 11:30 a.m., Ballroom, Surbeck Center
- Mr. & Miss Mines Pageant, 7 p.m., Ballroom, Surbeck Center

Thursday, Feb. 20:

- Engineering & Science Day with between 400-600 middle and high school students visiting the School of Mines campus for campus tours.
- Chemistry magic shows, open to the public, 9 a.m., 10 a.m., and 11 a.m., lecture hall in Chemistry Building, room 2228.
- Music in Engineering Concert, noon, Music Center
- Curious about Curiosity? NASA's Mars Science Laboratory Mission Presentation by Tom Durkin, 1 p.m., Ballroom, Surbeck Center
- Museum of Geology Open House, noon-4 p.m.

Friday, Feb. 21:

- Rube Goldberg Challenge, college and high school teams will engineer contraptions to crush a can in at least 20 steps, public viewing at 3 p.m., Ballroom, Surbeck Center; sponsored by American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) of the Black Hills.

Saturday, Feb. 22:

- MathCounts Contest for sixth, seventh, and eighth grade students, 1 p.m., room 204, Classroom Building.
- ASCE dodge ball tournament, 10 a.m., King Center

SDSM&T fifth nationally for return on investment



The School of Mines is ranked fifth nationally for return on investment by BestColleges.com

Mines graduates on average earn a starting salary of \$62,400. The university's placement rate for graduates is 98 percent. Degree programs prepare students for careers in a variety of lucrative science, technology, engineering and mathematics (STEM) fields.

Using data from PayScale.com, BestColleges calculates the 30-year net return on investment (ROI) for Mines undergraduates as more than \$1.2 million

"The School of Mines offers a premier STEM education at a price families can afford," said Mines President Heather Wilson. "Our enrollment is on the rise, and one of the reasons for that is our exceptional return on investment."

SUNY-Maritime in Bronx, N.Y., was ranked first. Others in the top five were Colorado School of Mines in Golden, Colo.; Georgia Institute of Technology in Atlanta; and Massachusetts Maritime Academy in Buzzards Bay, Mass. The new rankings consider public colleges and universities throughout the United States.

The full list may be found at <http://www.bestcolleges.com/features/best-roi-colleges/>.

Meet your lawmaker at crackerbarrels

The School of Mines is again partnering with the Governmental Affairs Committee of the Rapid City Area Chamber of Commerce to host the legislative crackerbarrels, a series of forums in which lawmakers and their constituents come together to discuss bills to be introduced at the 2014 session.

Two crackerbarrels have already occurred, and upcoming sessions will be from 9-11 a.m. Saturdays, Feb. 22 and March 1, in room 204 of the Classroom Building. For details: <http://www.sdsmt.edu/News/Legislative-crackerbarrels-to-be-held-on-Mines-campus/>

Shoot for the stars: NASA astronaut lands on campus



NASA astronaut Col. Edward Michael Fincke delighted a crowd of more than 350 Mines students, faculty and staff at a Jan. 31 presentation. Having spent more than a year in orbit – the record for any astronaut in U.S. history – Fincke shared his spaceflight experiences serving as commander of the International Space Station and on the mission that marked the Space Shuttle Endeavor's final flight. He also toured the CAMP (Center for Advanced Manufacturing & Production) facilities where student teams build airplanes, race cars, Baja vehicles, no-emission snowmobiles, supermileage vehicles and more. Fincke inspired the crowd with stories of his boyhood dreams of becoming an astronaut and lessons of diligence, shared his experiences with NASA and discussed the future of space exploration.

The Higher Learning Commission invites third-party comment on the South Dakota School of Mines & Technology.

The South Dakota School of Mines & Technology seeks comments from the public about the university in preparation for its periodic evaluation by its regional accrediting agency. The university will host a visit April 2-4, 2014, by a team representing the Higher Learning Commission of the North Central Association. The South Dakota School of Mines & Technology has been accredited by the Commission since 1925. The team will review the institution's ongoing ability to meet the Commission's Criteria for Accreditation.

The public may send third-party comments to the following address:

Third-Party Comment on the South Dakota School of Mines & Technology
The Higher Learning Commission
230 South LaSalle Street, Suite 7-500
Chicago, IL 60604-1411

The public may also submit comments on the Commission's website at www.ncahlc.org

Comments must address substantive matters related to the quality of the institution or its academic programs. All comments must be in writing. All comments must be received by March 28, 2014.



Mines hosts 50th annual Concrete Conference

The South Dakota School of Mines & Technology will host its 50th annual Concrete Conference, Friday, March 7, in the Surbeck Center ballroom.

Approximately 125 professionals in all phases of the concrete industry will attend, including contractors, concrete suppliers and representatives from testing firms and government agencies.

Among the top speakers will be Venkataswamy Ramakrishnan, Ph.D., a retired School of Mines professor and world-renowned for his research discoveries in fiber-composite concrete over 40 years. He has been a consultant to all major fiber producers, both steel and synthetic, in the United State. He has authored or co-authored three books and more than 400 papers, including focus on non-destructive testing techniques. Ramakrishnan retired from the School of Mines in 2002 and was directly involved in many of the innovative concrete material developments, which have occurred at the School of Mines. He founded the American Concrete Institute (ACI), South Dakota Dakota chapter, which has sponsored the concrete conference since 1971. Ramakrishnan will present a historical perspective of technical issues and solutions relating to concrete.

Also, presenting twice at the conference will be David Darwin, Ph.D., past president of the American Concrete Institute. Darwin is the Deane E. Ackers Distinguished Professor and Chair of the Civil, Environmental and Architectural Engineering Department at the University of Kansas, Lawrence. His research focus is on improving the durability of concrete structures by minimizing cracking and improving the corrosion resistance of reinforced steel and on the bond strength of reinforcing steel to concrete. His conference presentation topics include the

50th Annual CONCRETE CONFERENCE

control of cracking in concrete and corrosion protection for reinforcing steel.

Other speakers include Peter Taylor, Iowa State University, mixture proportioning; Clifford MacDonald, Forta Corp., material behavior of synthetic fibers for crack control; Karen Schaefer and Tony Kulesa, School of Mines, university research and concrete activities in Mongolia; Dan Johnston, retired, state Department of Transportation, historical perspective on technical issues and solutions relating to concrete; Matthew R. Senecal, ACI, benefits, rationale and availability of the reorganized ACI.

Sponsors of this year's Concrete Conference are: GCC of America, South Dakota Ready Mix Concrete Association, Cretex, Croell Redi-Mix Inc., FORTA, Pete Lien & Sons Inc., Hills Materials Company, Dakota Chapter of the ACI and the School of Mines Department of Civil & Environmental Engineering and the SDSMT ASCE student chapter.

For additional details visit www.sdsmt.edu/Conferences/Concrete/

Surovek named fellow of the ASCE Structural Engineering Institute



Andrea Surovek, Ph.D., associate professor and William V. Coyle professor of the Department of Civil & Environmental Engineering at Mines, has been named a Fellow of the Structural Engineering Institute (SEI) of the American Society of Civil Engineers (ASCE). Surovek joined the department at the School of Mines in 2003 after receiving her master's from Purdue University and her Ph.D. from the Georgia Institute of Technology.

This prestigious award recognizes a select group of distinguished SEI members as leaders and mentors in the structural engineering profession. Surovek was awarded for her extensive leadership in the technical activities of the organization, most recently serving as the chair of the Technical Administrative Committee on Metals, overseeing the activities of eight other technical committees. SEI is a sub-community within ASCE that holds more than 20,000 structural engineering members. It helps support the needs of the structural engineering community while working on bettering the shape of the entire civil engineering community.

Surovek has more than fifty publications in the areas of structural engineering and engineering education. She serves on the Executive Committee of the Structural Stability Research Council (SSRC) and is an associate editor of the ASCE Journal of Structural Engineering, a premier journal in the field. She is the recipient of the American Society for Engineering Education (ASEE) Beer and Johnston Outstanding New Mechanics Educator Award, the Mines Bernard Ennenga Award for Excellence in Teaching, the SSRC Vinnakota Award and the ASEE Seeley Fellowship.

Order of Omega scholarship awarded to Haley Dunn



Senior Haley Dunn, a chemical engineering major at the South Dakota School of Mines & Technology, has received a scholarship from the Order of Omega, a Greek leadership honor society.

Students from the Greek houses on campus are selected each year to be inducted into the Order of Omega based on their service and leadership. The Order of Omega scholarship was established to recognize academic achievement, participation and leadership in campus organizations, citizenship and service within the campus.

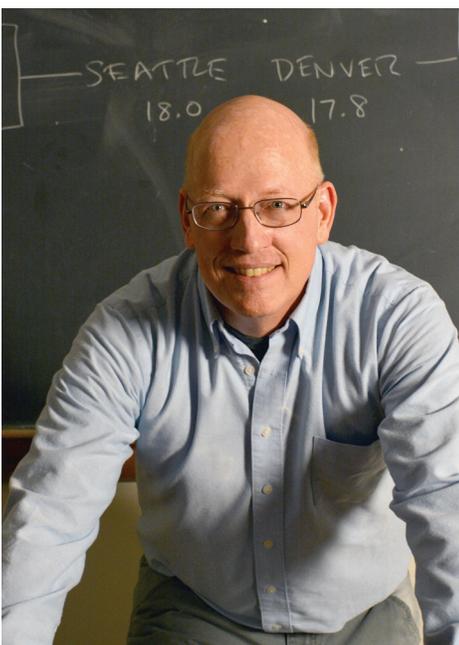
Dunn, from Boise, Idaho, has held numerous Alpha Delta Pi sorority offices, including formal recruitment chair, chapter president and new member coordinator. Dunn is also involved in the Professional Development Institute for Student Leaders, Society of Women Engineers, American Institute of Chemical Engineers and the Welcome Week and M Week committees.

A thrower on the Hardrocker track and field team, Dunn also volunteers with Mines Buddies and Girl Scouts. She has completed three internships at The Dow Chemical Company and hopes to continue full-time employment with the company following graduation in May.

Lofty Aspirations



Area students from kindergarten through eighth grades enjoyed a hands-on Flight Night camp taught by members of the Aero Design team. Students toured the CAT lab where they got a close-up look at a variety of airplanes built by the Mines team and tested an airplane wing against air flow, learned how to navigate with flight simulators, built their own plane and learned how camera-equipped unmanned aerial vehicles can be used by the military and law enforcement.



Johnson counts on math to predict Super Bowl champion

Professor Roger Johnson of the Department of Mathematics & Computer Science counted on math to predict the Seattle Seahawks would win the Super Bowl. While his model predicted a closer game, his method has a history of success. "This year my scheme correctly predicted game outcomes 63 percent during the regular season and 80 percent correct during the playoffs," he explained before the Super Bowl was played. During each NFL season, Johnson produces weekly "point-spread" ratings. Essentially, each team has a rating, and when two teams play each other, the predicted score difference is the difference in the ratings.

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gain valuable real-world experience," said Kennedy.

Mines students will engage in a work-study like program and travel to the base as needed to fulfill requirements for specific projects, which will involve studying and analyzing facilities and processes of the 28th Civil Engineer Installation Management Flight and providing results and recommendations.

Last fall, in a precursor to Thursday's official agreement, a group of five Mines' industrial engineering students created a 3D model to transform an outdated B-35 aircraft hangar into a recreation facility in a prototype design that would save Ellsworth an estimated \$140,000 in lieu of a "proof of concept" study.

"The agreement allows Mines students to serve the community while integrating theoretical and practical considerations into projects," said Dean Jensen, Ph.D., an industrial engineering associate professor who will serve as the university's point of contact.

He added that students will benefit from "excellent interaction with and supervision from practicing operations professionals" through a predictable supply of project-based learning opportunities.

The five industrial engineering students who designed the recreation facility prototype for Ellsworth last fall were John Urban, Tyler Vogel, Nick Grimshaw, Mike Dietz and Tyler Witzel. Their lead project contacts at Ellsworth were Kevin Vogel, Real Property Officer, and Chief Master Sgt. James Tighe.

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 Fran LeFort, communications manager, at 605.394.6082 or at fran.lefort@sdsmt.edu. For more School of Mines news, visit news.sdsmt.edu

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MINES MYTH BUSTERS

**CAN YOU TELL A TALL TALE FROM THE TRUTH?
6-7 P.M. TUESDAY, FEB. 18, 2014
MCKEEL ROOM, SURBECK CENTER**

**JOIN US AS OUR TEAM OF
MINES MYTH BUSTERS
DEBUNKS OR PROVES SOME OF
HISTORY'S MOST POPULAR
URBAN LEGENDS.**

**THIS FREE EVENT IS OPEN TO ALL:
THE CURIOUS SPECTATOR,
THE SERIOUS SCIENTIST,
AND EVERYONE IN BETWEEN.**

**FIND OUT WHICH MYTHS MAKE
THE CUT AND WHICH GET BUSTED
WITH MINES' SIGNATURE TWIST OF
EXPLOSIVE EXPERIMENTATION.**

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