Astronaut Buzz Aldrin Shares Moon Mission with Mines

South Dakota Mines community, alumni and SD GEARUP students attended a presentation and question-and-answer session by Astronaut Col. Buzz Aldrin July 10 in the King Center.

In 1966, Col. Aldrin performed the world’s first successful spacewalk, and on July 20, 1969, Col. Aldrin and Neil Armstrong made their historic Apollo 11 moonwalk, becoming the first two humans to set foot on another world.

Col. Aldrin is the author of eight books and continues to inspire new generations to blaze the trail of exploration.

Researchers Awarded $750,000 NASA Grant

SD Mines has been awarded a $750,000 NASA EPSCoR grant to develop direct-write printable spacecraft materials and electronic and electromagnetic devices for use in future exploration.

By printable spacecraft NASA envisions thin, lightweight, flexible sheets embedded with customized sensors and electronics for data gathering, communication and micro-propulsion. When deployed above other planets, the sheets will flutter to the surface like leaves, eliminating the need for complex landing systems and enabling humans to reach previously inaccessible areas. Upon reaching their destination, the sheets will transmit data collected during their fall and landing back to the host spacecraft.

Using direct-write technology, the team will develop printable spacecraft components ranging from sensors and antennas to solar cells and micropropulsion for steering. If successful, the micropropulsion technology developed will be the first-ever printable propellant formulation in the world.

“Traditionally we send one device to scan a narrow part of the atmosphere or surface of a planet. Through this work we will be able to scan a large portion of a planet. The printable spacecraft will be able to go everywhere, even in areas where humans cannot such as inside a volcanic crater,” said Dimitris Anagnostou, Ph.D., the project’s science principal investigator (PI) and Mines associate professor.

Led by Anagnostou, the team is comprised of researchers from SD Mines, NASA Jet Propulsion Laboratory, NASA Glenn Research Center, University of South Dakota, South Dakota State University, Optomec, Inc. and Quest Integrated.

The majority of the research will be conducted in the Direct-Write Laboratory (DWL) at SD Mines, which has been a leader in digital fabrication for the past decade. Uniquely positioned for the enterprise, the laboratory possesses the capability to synthesize inks, manufacture materials for space applications, print electric components and devices, and synthesize, process and print nanoparticles for propulsion and solar cells.

“Research at Mines increased last year. This is one more example of how we are expanding knowledge and its application,” said SD Mines President Heather Wilson.

Researchers will also investigate the stability of printed components under extreme thermal cycling from -120 degrees to 100 degrees Celsius, radiation and vacuum conditions.

Great Black Hills Duck Race Comes to Campus

The 26th annual Great Black Hills Duck Race was held at the South Dakota School of Mines & Technology’s O’Harra Stadium July 26 to benefit Children’s Miracle Network.

For this year’s race, Mines football players dove into the duck pile, chose their duck and ran a fun and challenging obstacle course to the finish line. Activities began at 1 p.m. with children’s games, rides and food vendors, followed by the Drop of the Flock at 2 p.m. More than $25,000 in prizes were awarded to the first 34 ducks to cross the finish line.

Children’s Miracle Network Hospitals help make medical miracles happen for children throughout the Black Hills area served by Regional Health Hospitals. With money raised through special events like the Duck Race, medical equipment and funding for children’s programs and services are possible. One hundred percent of the money raised locally stays within the area.

This year’s event was moved to Mines due to safety concerns with the fast flow of Rapid Creek.
Alumni & Families Gather for All-School Reunion

Nearly 1,200 alumni and family members gathered at Mines’ 2015 All-School Reunion July 8-11. Dating back to the Class of 1944, Hardrockers from 45 states joined fellow alumni for time-honored traditions such as climbing M Hill and a 130th birthday party to celebrate the university’s founding in 1885. Mines faithful traveled from as far away as Hawaii, Alaska and Norway, with South Dakota as the most represented state followed by Colorado. The 1970s was the most represented decade.

$200K Grants to Spur Economic Development

SD Mines has received $200,000 in research and development innovation grants through the South Dakota Board of Regents designed to stimulate economic growth.

The grants will strengthen the university’s infrastructure in materials processing and bio-imaging research through three projects. “These grants will give us capabilities to advance knowledge and push our research forward,” said Mines President Heather Wilson.

The projects are:

- Nano-Bio Microscopy Suite to support the Bio-chemical Spatio-temporal NeTwork Resource (Regents award of $105,406 with a project match of $282,942) – BioSNTR is a statewide initiative to enable bio-technology growth through industrial partnerships with Regents research institutions. Microscopy tools suitable for bio-imaging at the cellular and sub-cellular levels are critical to the success of BioSNTR. SD Mines has taken the lead in the “imaging core” of the BioSNTR center’s equipment, which will greatly extend and enhance efforts of the School of Mines team in cutting-edge research.
  
  o Steve Smith, Ph.D., Phil Ahrenkiel, Ph.D., and Robert Anderson, Ph.D., from the Nanoscience & Nanoengineering Program

- Sono-Tek ExactaCoat Ultrasonic Coating System (Regents award of $40,072 with a project match of $40,072) – A Sono-Tek ultrasonic spray system will be purchased for applying precise thin-film deposition and coating technology suitable for large area fabrication in the laboratory and is readily translatable to scaled-up commercial manufacturing. The system has applications in capacitors, batteries, flexible solar cells, medical devices, organic light emitting diodes and various other multifunctional nanocomposite films.
  
  o David Salem, Ph.D., director of the Composites and Polymer Engineering Laboratory and professor in the Department of Materials & Metallurgical Engineering and the Department of Chemical & Biological Engineering

- Plasma Electrolytic Oxidation (Regents award of $54,522 with a project match of $54,522) – The award will be used to purchase a unique high-voltage power supply switcher for nano Plasma Electrolytic Oxidation (PEO) technology being developed to extend the life of industrial products. The process will enable complex industrial equipment such as oil and gas pumps, fan blades and engine turbines to form a hardening outer coating of nano-particle crystalline oxide to resist corrosion and extend their production life.
  
  o Frank Kustas, Ph.D., senior research scientist in the Arbegast Materials Processing and Joining Laboratory
SD Mines graduate and former scholar-athlete Janelle Strampe has been named Rocky Mountain Athletic Conference (RMAC) Woman Athlete of the Year by the National Collegiate Athletic Association (NCAA).

The inaugural award honors a graduating female student athlete in the RMAC who has accomplished unparalleled academic achievements, athletics excellence, community service and leadership.

Strampe, from Green River, Wyo., was a double-sport scholar-athlete who in 2014 earned a bachelor’s degree in chemical engineering and in 2015 earned a master’s degree in biomedical engineering, both from SD Mines. She graduated with the top honor of summa cum laude and has been accepted to the University of Washington’s Medical School for the fall 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 Scholarship, a three-time SD Mines Richardson Scholarship, a four-time SD Mines Presidential Scholarship 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.

“The NCAA chose a very deserving scholar-athlete for this inaugural award. Janelle’s academic and athletic achievements are exemplary. We are proud of her and know she will have even more successes in medical school and throughout her career than she did at Mines,” said South Dakota Mines President Heather Wilson.

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 Phi Eta Sigma. Strampe also worked at Cornerstone Rescue Mission and Youth and Family Services.

“Janelle exemplifies what a true scholar-athlete is,” said Hardrocker Athletic Director Joel Lueken. “We are proud of her and her accomplishments as a Hardrocker. She has great things ahead of her.”

Harvey Fraser Gym Memorabilia Unveiled

The South Dakota School of Mines & Technology hosted a memorabilia unveiling at the new Harvey Fraser Gym July 10.

The two-court gymnasium at the university is named for former South Dakota Mines President Harvey Fraser. Generous gifts from Mines alumni Bill Brodsky, Larry Pearson, and Doug Beck and their spouses, Judy Brodsky, Linda Pearson, and Leah Beck combined with more than 400 contributors ranging from Mines alumni to Fraser friends and family, completed the $1 million gymnasium naming project.

The memorabilia display includes Fraser’s West Point ring and the presidential medallion presented to him at his inauguration as university president in the fall of 1966, among other items provided by his family.

Fraser’s three children, as well as several grandchildren and great-grandchildren, attended the unveiling.

Fraser, who passed away on Nov. 10, 2013, served as SD Mines president from 1966 to 1975. The new gymnasium is a part of the 24,750-square-foot Stephen D. Newlin Family Student Wellness & Recreation Center being built as an addition to the King Center.
Bret Miguez has been hired as the first ever strength and conditioning coach for Hardrocker Athletics, part of the partnership between the South Dakota School of Mines & Technology and Regional Health announced earlier in July.

Miguez 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.

“It’s great to have Bret on board,” said Hardrocker Athletic Director Joel Lueken. “This is a newly created position made possible by the partnership with Regional Health. This gives our athletes the opportunity to make themselves better as individuals and become more competitive in the Rocky Mountain Athletic Conference.”

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 certain sports programs, traveled as a trainer with the women’s basketball and men’s boxing teams, assisted with training of certain sports, instructed all athletes on correct exercise techniques and advised all athletes on general nutrition information.

Miguez also had stints at Colorado College, Northwest Missouri State, University of Kansas, University of Massachusetts Boston, Boston University and Milton Academy in Massachusetts.

“Having the strength and condition position fills a big need for SD Mines Athletics,” Lueken said. “Bret represents another piece of the puzzle to make our Hardrocker sports programs the best they can be with regard to the RMAC and NCAA Div. II.”

Earlier this month, the university and Regional Health announced Josh Sole, M.D., as team physician for all Hardrocker student-athletes as part of a new partnership and collaboration. Regional Health will also provide a full-time certified strength and conditioning coach, a full-time athletic trainer and a part-time athletic trainer/strength and conditioning position.

Men’s Basketball Team Earns Academic Excellence Award

South Dakota School of Mines & Technology men’s basketball program has earned the National Association of Basketball Coaches (NABC) 2014-15 Team Academic Excellence Award.

The honor recognizes outstanding academic achievement by a team with a cumulative grade point average (GPA) of 3.0 or better for the 2014-15 season.

“Academic excellence is a staple at South Dakota Mines,” said Hardrocker Athletic Director Joel Lueken. “Our scholar-athletes are some of the best in the nation. It’s great to receive this honor, which recognizes their hard work and efforts.”

In order to earn the NABC Team Academic Excellence Award, institutions in NCAA Div. I, II, III, and NAIA Div. I and II, must count the GPA of all men’s student-athletes who competed during the 2014-15 season.

“It is an honor to have our young men receive these types of awards,” said Hardrocker men’s basketball head coach Jason Henry. “To excel both on and off the court, especially at our institution, is a real testament to the type of scholar-athletes they all are.”
The National Association of Basketball Coaches (NABC) announced the 2014-15 NABC Honor Court, recognizing men's collegiate basketball scholar-athletes who have excelled in academics.

Seven Hardrocker scholar-athletes from the South Dakota School of Mines & Technology men's basketball program were named to the Honor Court for their academic excellence during the 2014-15 season. They are Jordan Dick (senior from Casper, Wyo.), Konor Kulas (junior from Appleton, Wis.), Mark Mazzucco (junior from Mesa, Ariz.), Joe Newkirk (junior from Layton, Utah), Philip Schanilec (junior from Forest River, N.D.), Justin Schock (junior from West Fargo, N.D.) and Tyler Schoening (junior from Sidney, Neb.).

"Maintaining a high GPA is difficult on its own, but to do so while competing in college athletics is an impressive achievement," said Hardrocker Athletic Director Joel Lueken.

The NABC Honor Court recognizes the talents and gifts that these young scholar-athletes possess off the court and the hard work they exhibit in the classroom.

"We are very proud to have these young men in our program and look forward to seeing all their accomplishments after they graduate," said Hardrocker men's basketball head coach Jason Henry. "It is amazing how our scholar-athletes can balance academics and athletics. Their ability to get a degree in the engineering field and still excel in a varsity sport is impressive."

To qualify for the award, student-athletes must:
- be a junior or senior academically and a varsity player
- have a cumulative GPA of 3.2 or higher at the conclusion of the 2014-15 academic year
- be a member of an NCAA Div. I, II, III or NAIA Div. I or II institution with an NABC member coach

Since its inception in 1927, the NABC has contributed numerous ideas and programs to help preserve and enhance the positive aspects of college basketball. These initiatives include establishing the original Basketball Hall of Fame (Naismith Memorial Basketball Hall of Fame), creating the format for today's NCAA Basketball Tournament, supporting Coaches vs. Cancer, and building the College Basketball Experience, which houses the National Collegiate Basketball Hall of Fame, as part of the Sprint Center Arena located in downtown Kansas City, Mo.

Volleyball Earns National Academic Award for Seventh Straight Year

The American Volleyball Coaches Association (AVCA) has announced that the South Dakota School of Mines & Technology women's volleyball program has earned the AVCA Team Academic Award for the 2014-2015 season, marking the seventh consecutive year the Lady Hardrockers have received this honor.

"To earn this award is a great honor, but to do so seven times in a row truly shows the caliber of scholar-athletes we continue to have at South Dakota Mines," said Lady Hardrocker volleyball head coach Tiffany McCampbell. "This team prides itself on performing well on the court and in the classroom. I'm so proud of our team and am glad to see their efforts aren't going unnoticed."

The award, which was initiated in the 1992-93 academic year, honors collegiate and high school volleyball teams that display excellence in the classroom during the school year by maintaining at least a 3.30 cumulative team grade-point average on a 4.0 scale or a 4.10 cumulative team GPA on a 5.0 scale.

"Academic excellence doesn't just happen," said Hardrocker Athletics Director Joel Lueken. "It takes consistent effort and determination. To earn this academic achievement for seven consecutive years is a remarkable feat."

The Lady Hardrockers cumulative GPA was 3.362.

"The academic program at Mines is challenging. Mines' scholar-athletes continue to do exceptionally well, and I'm proud of them," said Heather Wilson, president of the School of Mines.

The AVCA Team Academic Award has become one of the AVCA's fastest-growing awards programs, seeing an impressive surge in teams honored over the past several years. Since the 2000-2001 season, the number of recipients has increased every single year but one, while amassing an overall 300 percent increase over the span of the last decade. Since the inception of the awards in 1993, the number of winners has increased from 62 to its current number of 622.
Mines Hosts Hands-on Demos, Summer Camps for K-12 Students

Mines hosted 40 elementary students for hands-on chemistry and physics demonstrations as part of an AmeriCorps summer science camp.

The university also hosted a Green Chemistry Camp and a Chemical and Biological Engineering Summer Institute aimed at high school students. High school students got an immersive college experience with innovative, hands-on labs, industry tours and interactive panels featuring entrepreneurs and professionals.
Shrestha Awarded SD Solid Waste Management Scholarship

Namita Shrestha, a SD Mines civil and environmental engineering Ph.D. student, was awarded a scholarship by the SD Solid Waste Management Association, recognizing her passion to protect and enhance our natural resources and environment.

Shrestha's research to reclaim municipal wastewater for use in thermal power plants is funded by Electric Power Research Institute.

She currently conducts research under Venkataramana Gadhamshetty, Ph.D., assistant professor in the Department of Civil & Environmental Engineering. She plays an instrumental role in Gadhamshetty’s microbial-electrochemistry laboratory and develops next-generation technologies to recover electrons from municipal wastewater to produce sustainable electricity.

Prior to enrolling at SD Mines, Shrestha earned an undergraduate degree in civil engineering and a master’s degree in civil and environmental engineering from the Institute of Engineering, Pulchowk Campus, located in her home country of Nepal.

She was named Outstanding Civil and Environmental Engineering Graduate Student for the 2014-2015 school year at the SD Mines Honors Convocation in April.

“Namita is a deserving candidate. She puts in countless hours in the laboratory, works independently and has the potential to emerge as a faculty researcher who can transform the waste industry,” Gadhamshetty said.

The South Dakota Solid Waste Management Association scholarship will go toward tuition fees for her doctoral degree, which she intends to complete in 2018. After receiving her Ph.D., Shrestha plans to continue her research in academia.

SD Mines Selected to Host 2016 Regional Physics Society Meeting

The School of Mines has been selected to host next year’s regional meeting of the Society of Physics Students (SPS).

The three-day meeting will bring together university and high school students and advisors from South Dakota, North Dakota, Minnesota, Iowa and Nebraska to learn about physics research being conducted at other universities and to develop relationships among physics students in their field of interest. Participants will be invited to present their research and will hear from expert guest speakers.

Nearly 50 people are expected to attend the Zone 11 meeting March 11-13, 2016.

The regional meeting will also serve as a recruiting opportunity for the university’s undergraduate and graduate physics programs. “The best part of hosting the meeting here is the chance to show these visiting students our campus, research facilities and everything the Black Hills area has to offer in the hopes they will consider enrolling here for their graduate studies,” said Michael Dowding, physics instructor and advisor to the SD Mines SPS chapter.

South Dakota Mines offers a Bachelor of Science, Master of Science and a new Doctorate in physics. The university added a Ph.D. in physics in the fall of 2013, and this fall is expected to enroll 21 doctoral students. Four faculty researchers with established leadership roles in national and international underground science experiments have been added to the physics department staff to support the new program, bringing the total number of Mines’ particle physicists to five.

SPS is a professional organization for college-level members of any major who are interested in physics.

For more information regarding SPS meetings, visit: http://www.spsnational.org/meetings/index.htm.

Prospective Students Visit Mines

Go To Mines hosts juniors and seniors, as well as their parents, who explore the university's engineering and science curriculum, research projects, and real-world education offerings. At the event’s welcome, hundreds of students sit in chairs labeled with employers of the most recent graduating class. Attendees also have the chance to view residence halls and campus. Current Mines students, faculty and staff provide insider tips about campus life, the application process, scholarships and financial aid.

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 605.394.2534 or at Danielle.Mason@sdsmt.edu. For more Mines news, visit news.sdsmt.edu

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