The SD Mines Bladesmithing Team has won the grand prize at the international Mineral, Metals & Materials Society (TMS) Bladesmithing Competition beating MIT, Virginia Polytech and the Colorado School of Mines.

Mines students worked one-and-a-half years on the 34-inch, single-edged blade that is based on the Arhus Farm sword from 10th century Norway. The handle is made of Finnish, Masur birch with spacers made of local birch bark. The handle of the sword also includes the guard and pommel, which are made of bronze. Part of the contest includes a video, produced by the team, available here. It shows bladesmithing team members using fire to heat the steel, a trip hammer to shape the blade, oil to quench and temper it and various tools to polish and sharpen the metal.

The work of SD Mines students and professors to recreate a samurai sword about 10 years ago helped start this international collegiate bladesmithing competition.

“This competition is a great way to learn metallurgy, and our students have worked very hard on it” said SD Mines President Heather Wilson. “I’m really pleased to see their great work recognized.”

Blades are judged on a number of criteria, including proper dimensions, difficulty in manufacturing, creativity, a 10-page report and any additional metallurgical study that went beyond the norm. During the different stages of the sword’s development, the team cut off parts of the tang, which is the steel end of the sword that is part of the handle, and did scientific testing to track changes in microstructure and hardness of the metal.

“The best part about bladesmithing at SD Mines, which also really applies to our education here, is the level of autonomy we get as undergraduates,” says Jackson Ade, a senior in metallurgical engineering from Gilbert, Ariz. “This autonomy allows us as students to pursue most projects we want to do, as long as we are willing to put the work in. This bladesmithing project is an example of that.”
SD Attorney General and Mines Alumnus Marty Jackley Returns to Mines as Commencement Speaker

South Dakota Attorney General and SD Mines alumnus Marty Jackley will speak at the South Dakota School of Mines & Technology's 175th commencement. Jackley is well known for his highly successful career in the legal profession, having served as both the U.S. Attorney for South Dakota and as the state's Attorney General.

After earning a bachelor's degree in electrical engineering from SD Mines in 1992 and a law degree from the University of South Dakota in 1995, Jackley clerked for the Chief Federal Judge of South Dakota. He then joined and became a partner at the Rapid City law firm Gunderson, Palmer, Nelson and Ashmore, where he specialized in representing design professionals and contractors, as well as criminal and business litigation. In 2006, he was unanimously confirmed by the U.S. Senate as U.S. Attorney for South Dakota. He was named the South Dakota Prosecutor of the Year by South Dakota's State's Attorneys in 2008.

Jackley was twice elected as South Dakota's Attorney General, first in 2010 and again in 2014. He has served as South Dakota's first President of the National Association of Attorneys General and Chairman of the Conference of Western Attorneys General. In 2016, he received the National Kelley–Wyman Outstanding Attorney General award from his fellow attorneys general.

While at Mines, Jackley received eight Athletic “M” Awards in track and cross country and was inducted into the Hardrocker Athletic Hall of Fame in 2011. His other activities at Mines included being named homecoming king, a commencement speaker and joining the Theta Tau Engineering Fraternity. He has also received his Engineer-in-Training certification.

Returning to his alma mater as the 2017 spring commencement speaker, Jackley brings the decades of accumulated experience he has gained since graduating Mines back to share with the new scientists and engineers about to embark on their own futures.

The 2017 Spring Commencement at Mines begins at 9 a.m. on Saturday, May 6, in the Rushmore Plaza Civic Center Ice Arena. The event is open to the public. The commencement ceremony is also streamed live online for those who cannot attend in person. The video can be found at www.sdsmt.edu/GradVideo.

Intern Spotlight

Alysia Rupp | Michelin

Junior industrial engineering major Alysia Rupp from Marshall, Minn., is completing a co-op with Michelin North America in South Carolina. She is working in the continuous improvement department on a variety of projects. One of her biggest is the Automated Guided Vehicle simulation, collecting data on the factory floor and making a 3D computer model for optimization. She is pictured here at US2, the largest rubber manufacturing plant in the world.
SD Mines and Dakota State University will both host free girls GenCyber security camps on their campuses this summer. These programs are funded by the National Security Agency (NSA), which pays tuition and registration fees for the participants.

“The DSU camp will focus on middle school girls; at SD Mines the focus is for high school girls,” said Dr. Ashley Podhradsky, associate professor of digital forensics and information assurance at DSU. She is also the director of the GenCyber girls’ camp at DSU and helped SD Mines start their program.

The goal of the NSA’s GenCyber program is to inspire the next generation of cyber workers, helping young people direct their talents toward cybersecurity careers that are critical to national and economic security.

In addition, “Increasing diversity in tech is an important effort,” said Podhradsky. According to the National Center for Women and Technology, women made up 25 percent of the computing workforce in 2015; when considering all professional occupations, women make up 57 percent of the U.S. workforce. Because of the gap in these numbers, “It was important to work with Mines to help them with their first GenCyber proposal because every effort to close the diversity gap is important,” she said.

“[DSU’s President] Dr. Jose-Marie Griffiths and I talked last spring about how Mines and Dakota State could work more closely together on computer science and computer security,” said SD Mines President Dr. Heather Wilson. “DSU’s GenCyber camp for girls has been oversubscribed and this seemed like a great first step we could take together. We need to inspire more girls to consider computer science and cyber security,” she added.

Griffiths agreed that a cooperative attitude was essential. “With the shortage of women in technology fields, anything we can do to encourage young women to explore STEM careers can only be good.” It was interesting to note that the two universities are led by women, she added.

The SD Mines GenCyber camp will take place July 16-21, with 30 high school girls in grades 9-12. Registration for this camp is already full. The Dakota State University GenCyber camp takes place June 25-29 for middle school girls in grades 7-9.

Core sessions at the camps will focus on cybersecurity, programming, networking and robotics. Students also have a choice of electives including: multimedia forensics, socket programming, password cracking, iRobot create, network forensics, web hacking, and 3D printing.

The SD Mines camp features a collaboration with Black Hills Information Security (BHIS), which is a company that is focused on customized security solutions for their clients. Officials from BHIS will be involved in enhancing the curriculum alongside professors in Mines’ Department of Mathematics and Computer Science.

At the DSU girls’ camp, a Computer Analysis Response Team from the FBI will be coming to talk about digital forensics. There will be a cyber sleuth escape room, and Google is sending two representatives to discuss security and privacy. Access Data, the leading forensics company in the world, “will be coming to do hands-on labs with social media and web traffic,” Podhradsky said.

Those interested in learning about the Mines’ GenCyber Camp can find more information here.

Those interested in attending the Dakota State’s GenCyber Camp can find more information here.
Two separate organizations rank SD Mines in the top five in the United States for online engineering graduate degrees. Both the Guide to Online Schools and Grad Source put SD Mines as third in the United States for value based on academic strength and affordability. In its review Grad Source states: “If affordability is your goal, and a school's long track record matters, consider the South Dakota School of Mines and Technology.” The SR Education Group Guide to Online Schools also ranks SD Mines third in the nation among colleges offering engineering management degrees.

“Over the past five years, we have strengthened our distance-enabled professional degrees in areas where we are exceptional,” said Mines President Heather Wilson. “It's nice to have the work of our faculty be recognized.” SD Mines offers three online masters degrees. They include: Construction Engineering and Management, Engineering Management and Mining Engineering and Management.

Mines online students receive instruction from the same accredited engineering faculty as our full-time residential students. Online students can choose to do the entire program 100 percent on the web, or they can take some courses in person on our campus. Mines has an excellent return on investment. According to a 2015 study, “The Economic Value of College Majors” by Georgetown University, over the course of their career, those with a graduate degree earn an average of $78,000 annually compared to $61,000 for those with a bachelor's alone. Furthermore, the report shows those who complete a specialized engineering master's degree earn higher average salaries than many other graduate degrees.

High Plains Regional Science & Engineering Fair Breaks Records

The 62nd annual High Plains Regional Science and Engineering Fair broke records this year, nearly doubling the number of projects and students from last year. This year's fair saw over 570 projects completed by nearly 800 students, 60 percent of which were female and 14 percent were Native American.

Elsie Dubray from Timber Lake High School took first place in the fair and will go on to compete in the Intel International Science & Engineering Fair in May with an all-expense paid trip to Los Angeles, Calif., for the student and chaperone. Additionally, Hill City High School received a $5,000 EPSCoR lab makeover award.
Annual Cultural Expo Features International Food, Entertainment

International students and a variety of community groups celebrated their cultural diversity with food, entertainment and displays during the annual SD Mines Cultural Expo.
Spring and Summer Camps to Feature Athletics, Explosives, Entrepreneurship, Fossils & Forensics

Registration is now open for SD Mines’ 2017 summer camps. Camps range from 3D printing, forensics and paleontology to mining explosives, entrepreneurship, coding and cyber security. The unique, high-quality residential camps offer high school students the opportunity to engage in hands-on experiments and make connections with professors, like-minded peers and industry leaders nationwide. The goal is to encourage the next generation to pursue careers in science, technology, engineering and math and get a taste of college life.

Students spend a week on campus working one-on-one with professors to get college-level experience and access to immersive experiments. Each camp offers opportunities to explore some of the local activities and attractions that make the Rushmore Region famous. Students travel from as far away as New York, Florida, California and Texas.

Registration for the academic summer camps is filling fast. The geology, materials and metallurgy and GenCyber camps are already full.

Camps include:

- **Fossils – The Path of the Paleontologist**, June 11-16
- **Camp Construct – Civil and Environmental Engineering**, June 11-16
- **Mining and Explosives – Mining Engineering**, June 18-23
- **Wild Weather – The Science Beyond Weather and Climate**, June 18-23
- **Geology Rocks – Youth Field Camp in the Black Hills**, July 9-14
- **Entrepreneur Bootcamp – Industrial Engineering**, July 9-14
- **Chemical & Biological – Engineering Institute**, July 9-14
- **Green Chemistry – Treat the Earth with Respect**, July 9-14
- **ASM Materials, Metallurgy & Forensics – Metallurgical Engineering**, July 10-14
- **3D and Beyond – Mechanical Engineering in the New World**, July 16-21

For more information on the academic summer camps at Mines, call (605) 394-1261, email Taylor.Davis@sdsmt.edu or visit [http://www.sdsmt.edu/SummerCamps](http://www.sdsmt.edu/SummerCamps).

Also, available this spring and summer are a wide range of athletic activities for K-12 youth. Camps, clinics and tournaments for football, soccer, basketball and volleyball are available for boys and girls of various ages and with various skill levels. These activities run April through July. For a schedule and more information, visit [Hardrocker Athletics](http://www.sdsmt.edu/HardrockerAthletics).
Renovation of Nearly-Century-Old McLaury Building Set to Begin

SD Mines is announcing a multi-phase renovation of the nearly-century-old McLaury Building. The renovations will update facilities, improve efficiency and bring the building into compliance with the Americans with Disabilities Act.

McLaury is among the oldest and most iconic buildings on campus. Construction on the building was completed in 1921. In 1950 it was renamed after beloved Mines math professor Howard Lincoln McLaury.

“McLaury is a beautiful historic building,” says Mines President Heather Wilson. “It needs to be restored, and we will be able to start that effort this summer so that it will serve the needs of Mines students well into the future.”

The last major renovations on the McLaury Building took place between 1975 and 1979. This renovation occurs in several phases. Phase one includes a new elevator, windows, bathrooms and work on the exterior and foundation of the building. The next four phases of the project include architectural improvements and an overhaul of the heating and air conditioning system. Future renovations are taking place as maintenance and repair funding is available.

McLaury houses the math and computer science department at SD Mines. The SD Mines computer programming team also calls the historic building home. The team will compete for the 7th time in the World Finals held here in Rapid City this May.

Symposium Showcases Student Research at Mines

Students presented their work at the annual Research Symposium yesterday in the Surbeck Center.

Graduate and undergraduate students showcased their research through 41 oral presentations and 63 poster projects on science and engineering topics that included, among others, neutrino and dark matter research, dynamic imaging of biological cells, surface modification of nanoparticles, biotechnology, and materials processing using cold spray, friction stir welding and other high-tech processes.

This year the number of students actively participating in the symposium exceeded 100,” said Jan Pyszynski, Ph.D., vice president for Research Affairs. “Strong participation of undergraduate and graduate students in the symposium is the result of a significant growth of research activities on the campus and faculty dedication.”

The evening awards speaker was Linda Broadbelt, Chair and Sarah Rebecca Roland Professor in the Department of Chemical & Biological Engineering at Northwestern University. Broadbelt is currently an associate editor for Industrial & Engineering Chemistry Research and on the editorial board for International Journal of Chemical Kinetics. Her honors include selection as the AIChE Women’s Initiative Committee Mentorship Excellence Award winner, a Fellow of the American Association for the Advancement of Science, a Fulbright Distinguished Scholar Award, a CAREER Award from the National Science Foundation and a McCormick Excellence Award.
Students in King Adkins’ Technical Communications (Tech Comm) course had a surprise this semester. They would be writing for a worldwide audience in advance of the International Collegiate Programming Contest (ICPC) World Finals. Adkins’ class is partnering with ICPCNews and the IBM media group to provide content to world finals contestants, coaches, staff and spectators as well as the Black Hills community.

The ICPC World Finals are coming to Rapid City May 20-25, and excitement is building in advance of the actual event. Around the world, people are watching the ICPC website, Facebook, Twitter, Instagram, LinkedIn and Youtube to learn as much as they can about this year’s contest. There will even be live television coverage of the event. IBM officials estimate that over a billion press impressions will be generated from the ICPC World Finals coverage. SD Mines students will be an integral part of creating that information machine.

Adkins has been a long-time advocate for service learning and for teaching the power of social media. This project gives him the chance to combine these two focus areas. “Students learn best when they can see the real-world application of their work, and working for a client like the ICPC really gets their attention,” says Adkins.

He cites the importance of providing information and generating excitement about Rapid City around the world. Adkins also believes it’s important to bring the local community together to support this event. “Obviously, we want the rest of the world to know about Rapid City, but we also want those who live here to recognize the area’s ability to attract world class events,” he says.

Approximately 1,500 contestants, coaches, staff and spectators from 70 countries will arrive in Rapid City for the ICPC. They will all have had the opportunity to be better informed about the area through the efforts of Adkins’ students. The class is preparing materials about topics such as Mt. Rushmore, the Sanford Mine project and the Pine Ridge Reservation.

One student in the class, Travis Fincher, points out, “Doing this research has allowed me, a non-native of South Dakota, to discover things about the Black Hills I never knew.”

The top competitors at the ICPC World Finals represent the best collegiate programmers on the planet. Each fall, about 300,000 students across six continents compete for spots on 2,736 local university teams. The winning university teams progress through multi-level regional competitions with 133 teams of three advancing to the World Finals. SD Mines will have a team at the World Finals for the seventh time since 1998 – an accomplishment few schools, and no other school of comparable size, can claim.

Kyle Riley, Ph.D., chair of Mines’ math and computer science department says, “There are no ‘free’ spots at the world finals. The SD Mines team had to earn a spot just like everyone else. And we wouldn’t have it any other way.”

Tech Comm Class Writes for Worldwide Audience
Prospective Students Hosted at Go To Mines Open House March 25

SD Mines hosted about 100 prospective students during a spring Go To Mines event, where students and their families toured departments, residence halls and other facilities and met faculty and current students.

SD Mines to Host Flight Night with Aero Design Team

The Aero Design team hosted Flight Night Tuesday, April 4, on campus. Students had the opportunity to tour the lab where the Aero Design team designs and builds its plane, fly the simulator the team trains on to prepare for national competition, watch a flying demonstration and build their own balsa wood plane to take home.

The hands-on event was designed to teach students about the physics behind flight and show them possible future careers in industry.
Local entrants among qualifiers at Governor’s Giant Vision Competition

Mines’ summer camps: Athletics, explosives, entrepreneurship, fossils & forensics

Cultural Expo a multi-nation collaboration

Areas brightest minds converge in Rapid City for annual science fair

After solid indoor season, Mines track already starting outdoor season

Lead-Deadwood experiments with STEM Family Fun Night

STEMinist Star 3K Glow Run Raises Money for Girls Inc.

Flight Night at School of Mines allows young minds to soar

Mines students to compete in aerial robot challenge

School of Mines to start McLaury Building renovation

About Legacy News

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