PROGRAMMING TO SUPPORT ACCESS AND SUCCESS OF AMERICAN INDIAN STUDENTS

Summary Report 2019-2020
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## Moving Diversity and Inclusion Forward

## Contact List
The South Dakota Mines (SD Mines) has several activities and programs geared toward supporting the access and success of the American Indian student and surrounding community. Whether through pre-college orientation, summer bridge programs, research, or undergraduate and graduate education, there are many opportunities to support South Dakota's largest minority group. All programs described in this report are facilitated by someone on the SD Mines campus.

// RECRUITMENT

**American Indian Science and Engineering Society (AISES) Pre-College Outreach**

SD Mines’ chapter of the American Indian Science & Engineering Society (AISES) provides science and engineering experiences for places with high concentrations of American Indian children such as the Black Hills Children’s Home. They also strive to strengthen AISES Region V, by assisting other institutions to develop associate AISES chapters. In the past, AISES members have worked with SD Mines faculty with a science-based program at Central High School as well as offered tutoring. The chapter is also invited to speak to K-12 reservation-based schools when they visit campus. The purpose of the pre-college outreach is to build a foundation among American Indian youth to pursue higher education, particularly in the STEM fields.

*Contact:*
*Jesse Herrera, AISES Advisor, Director of Inclusion*

**Admissions Outreach**

SD Mines’ Admissions Office makes concerted efforts to connect with high school students, school counselors and math and science teachers at tribal high schools and high schools with high concentrations of Native American students in South Dakota and surrounding states. The purpose of these connections is to educate Native American parents and pre-college students about the value and process of entering higher education, as well as the benefits of a science or engineering education at SD Mines. SD Mines participates in College Application Week. This program provides fee waivers for students at all targeted high schools across the state, many of which are tribal schools.

Connection is accomplished in a variety of modalities including technology, media and literature, but primarily through in-person contact such as: high school visits; college fairs (Mobridge, Eagle Butte, Winner, Pine Ridge, etc.); representation at Lakota Nations Invitational basketball tournament in Rapid City (specifically at the LNI college fair); collaboration with the Jump Start Program Access Advisors and the SD Mines Jump Start Retention Advisor; presentations to middle and high schools visiting the campus; encouragement and recruitment of current students to both reach out to their home high schools, family, and friends regarding education at SD Mines and represent the university through the Student Ambassador program.

*Contact:*
*Molly Moore, Associate Provost for Academic Administration and Director of Admissions*
Tribal Liaison

The Director of Planning & Events in the Office of the President serves as a liaison between the university and tribal schools and organizations. The liaison has assists in the planning of outreach events for tribal school students and frequently represents the university in discussions involving collaboration with tribal organizations.

Contact:
Jade Herman, Special Projects Coordinator, Office of the President

Green Chemistry Outreach Program

The program is designed to promote excitement and an appreciation for both science and higher education to middle school and high school students. The program delivers educational resources aligned with the SD Science Standards for science teachers on the Pine Ridge Reservation and Rapid City area. The program aim is to stimulate students’ interest in chemistry, to demonstrate the relevance of chemistry in everyday life, and to encourage students to consider pursuing careers in STEM. A total of 210 PreK-12 students participated in the workshops, of those 98 were American Indian, and 112 Caucasian.

The ACS Student Chapter obtained funding through the ACS Innovative Project Grant Program for project titled Green Chemistry Workshop: Bridging the Gap between Chemistry and Environment (2019). In addition, a matching fund from the Department of Chemistry, Biology and Health Sciences (CBHS) was obtained. The goals of the project are to (1) Stimulate students’ creative thinking, curiosity, and start recognizing current scientific environmental problems, (2) inspire students to focus on the environmental impact of their decisions and consider alternative solutions, (3) inform middle school aged students of potential careers they could pursue with a degree in STEM, (4) increase the number of ACS members and university students involved in Green Chemistry outreach activities.

The 2019 Green Chemistry Summer Camp was held at the Department of Chemistry & Applied Biological Science (CABS) July 7-12, 2019. Through engaging green chemistry hands-on activities, the camp strives to serve students facing difficulty from economically depressed areas such as Pine Ridge Reservation where the population lives under the poverty line. One American Indian student from Red Cloud School and one from North Middle School participated in the 2019 Green Chemistry Summer Camp. The survey results demonstrated that students are reporting increased interest in science, greater interest in pursuing science careers, greater interest in pursuing a STEM degree and increased student enthusiasm for attending SD Mines.

Contact Person:
Dr. Tsvetanka Filipova, Senior Lecturer and Faculty Advisor of the ACS Student Chapter, Chemistry, Biology and Health Sciences
Center for Inclusion Pre-Orientaion

This program invites self-identified, incoming students of color which includes non-traditional and transfer American Indian students. At the start of the fall semester, students come to campus the week before classes begin to start the acclimation process to college life. The Office of Residential Life allows students to move in prior to official move-in day. During this time students attend sessions to get oriented to their class schedule, meet their advisors, are paired with mentors, build relationships with each other, and learn how to be successful in college. American Indian students who participate in this program will have some of their textbooks covered through the Center for Inclusion Book Loan Library.

Contact:
Jesse Herrera, Director of Inclusion

Mentor Program

To ensure that no American Indian student feels isolated or unsupported, peer mentorship is offered to all students who participate in the Center for Inclusion Pre-Orientaion as well as those who feel they could benefit from such a relationship. Mentors provide guidance, connection and support throughout the first semester. Although the commitment for students is only for the first semester, many continue their relationship well into the future. The goal of the program is to positively impact retention rates of American Indian students. Related objectives are for minority students to have a successful and satisfactory first year, whether they are first-time freshmen, transfer, or non-traditional students. The program is also geared toward reinforcing a Native support system for students who may feel out of place. Mentors are volunteers, but the Center for Inclusion compensates students when funds are available.

Contact:
Jesse Herrera, Director of Inclusion

National Science Foundation (NSF) OSSPEEC II Grant

is a Pre-Engineering Education Collaborative with Oglala Lakota College, South Dakota State University, and SD Mines. The project aims to increase recruitment, retention, persistence, and completion rates in pre-engineering and engineering for Native American students. OSSPEEC II provides culturally centered and integrated project based experiential learning through pre-engineering classroom activities and co-curricular activities consisting of research on reservation needs in the areas of water quality and quantity, geology, and sustainability. The project also investigates and elucidates the impact of the OSSPEEC model which emphasizes the importance of experiential learning and incorporation of the Lakota world view as the basis for making essentially correct preconceptions in engineering. The program is designed for Native American students to complete their first two years of engineering education at Oglala Lakota College and then to complete their engineering education at South Dakota State University or SD Mines. An additional goal of the OSSPEEC II project is to improve the quality of engineering education at Oglala Lakota College through professional development of faculty and staff.

Contact:
Dr. Foster Sawyer, Associate Professor Geology and Geological Engineering
Groundwater and surface water interactions modeling along the White River near Oglala, South Dakota

Streamflow losses are observed along the White Clay fault accommodation zone, as well as naturally occurring sources of radionuclides. We propose that White River baseflow through the White Clay fault accommodation zone could be a source of elevated radionuclide concentration observed in the Arikaree aquifer. This work presents a collaboration between OLC and SDSMT for developing a coupled surface water-groundwater interactions model at the streamflow loss zone along the White River, near Oglala, South Dakota. In Year 1, faults are identified through remote sensing images and field study, and a 2D groundwater-surface water model was built. A graduate student (Ryan Puzel) from SDSMT and a female undergraduate student (Elisha Yellow Thunder) participated in the project. In Year 2, we will focus on alluvium aquifer characterization in 3D and build a fully 3D model to better understand the interactions of surface water and groundwater.

Contact:
Dr. Liangping Li, Assistant Professor, Geology and Geological Engineering

Emergency Fund

The Emergency Fund is intended for students with a dire financial need. The purpose is to assist students with unexpected expenses which may put them at risk for dropping out of school. Funds may be used to pay for vehicle repairs, utility bills, textbooks, counseling, and other support. This fund has also helped many students who have encountered acute financial need due to illness or injury, or loss of employment. Funds are accumulated from private donations. The Emergency Fund is open to all students including American Indian students.

Contact:
Dr. Pat Mahon, Vice President for Student Development and Dean of Students Student Development

American Indian Science & Engineering Society (AISES)

SD Mines has an award-winning AISES chapter that promotes excellence, leadership, and opportunities in education and professional development of students. AISES participates in national and regional conferences, scholarships, job placement assistance, internships and co-op opportunities, networking and social support, community service and campus involvement.

Contact:
Jesse Herrera, Director of Inclusion
Center for Inclusion

Provides direct student support services for all underrepresented students, including American Indian students. Support services include, but are not limited to, scholarship alerts, internship/co-op information, as well as providing opportunities for leadership and professional development. The Center also provides leadership and helps to facilitate the coordination of programs to underrepresented groups, especially those related to American Indian students. The office reaches out to all underrepresented populations; holds free student lunches for networking and social support each semester; and coordinates the Honoring Ceremony for American Indian graduates. The Center also collaborates with several departments across campus to promote diversity and inclusion initiatives for students, staff and faculty.

Contact:
Jesse Herrera, Director of Inclusion

American Indian Honoring Ceremony

The Center for Inclusion coordinates and sponsors the American Indian Honoring Ceremony established in December 2008. This is a special ceremony held in the spring the day before campus commencement. It celebrates and honors SD Mines Native graduates by providing a traditional meal for graduates, family, and invited community. Speakers are drawn from faculty, staff, alumni, and tribal communities. The Honoring Ceremony includes an invocation, prayers, songs, a traditional meal and presents to the graduates from their families.

Contact:
Jesse Herrera, Director of Inclusion
Research Experiences for Undergraduates (REU)

SD Mines is host to two NSF REU programs, the NSF REU “Back to the Future” Site and the NSF REU “Security Printing and Anti-Counterfeiting Technologies (SPACT)” Site. These programs provide research opportunities for underrepresented students (particularly Native American students). The REU sites engage students in a funded 10-week summer undergraduate research experience. The sites are open to students from all backgrounds that are interested in science and engineering.

The theme of the “Back to the Future” site is Metallurgical/Materials engineering research, with many of the projects having historical, cultural, or artistic significance. Supplementary activities include many hands-on workshops involving art, history, and metallurgy some of which are led by local Lakota artists. The program website is located at: http://met.sdsmt.edu/reu/.

The REU SPACT site focuses on research to combat counterfeiting. Several of the past projects engaged students in the authentication of Native American artifacts. Recently, the SPACT research team and students have teamed with area museums such as the Heritage Center at Red Cloud Indian School to address issues with counterfeiting of Native American art. The program website is located at: http://spact-center.org/reu/.

As part of the site activities, undergraduate students are also involved in outreach activities which support ongoing programs that support Native American high school students such as the Army Educational Outreach REAP and UNITE program. Recent highlights include student presentations at the national American Indian Science and Engineering (AISES) conference and student mentoring of local Native American high school students. The sites have had an average participation of nearly 20% Native American students.

Contacts:
Dr. Michael West, Department Head and Associate Professor Department of Materials and Metallurgical Engineering
Dr. Grant Crawford, Associate Professor Department of Materials and Metallurgical Engineering

NSF Tiospaye Scholar Program

Has received three NSF S-STEM awards of more than $1.8M with 85% devoted to scholarships for American Indian students in engineering, science, and mathematics. Applicants must be academically talented and financially needy. The program has also received over $210K in private funding. The program provides support in five areas: financial, academic, professional, cultural, and social. The students are provided weekly mentoring sessions, monthly mentoring with the director, weekly tutoring in key gateway classes including trigonometry, calculus, differential equations, chemistry, physics, computer programming, statics, and dynamics. Bi-weekly professional lunch meetings feature programming in the five areas of support. During the Spring 2020 semester, the program is supporting 9 scholars. Since the first scholarships were awarded in 2009, the program has graduated 49 scholars (almost all first-generation college students), including 15 women, in the following STEM majors: Chemistry, Chemical Engineering, Civil Engineering, Electrical Engineering, Geological Engineering, Geology, Industrial Engineering & Engineering Management, Mechanical Engineering, Mining Engineering, and Physics. Eligible students may receive up to $8K per year in scholarships. Remaining NSF funding is being awarded as a no-cost extension. A major initiative to secure private funding to establish a permanent endowment. The Tiospaye Program is housed on the garden level of the Devereaux Library and is co-located with the Industrial Engineering Department.

Contact:
Dr. Carter Kerk, Professor of Industrial Engineering, Director NSF Tiospaye Scholar Program
SCHOLARSHIPS

SD Mines is a member of the NSF All Nations Louis Stokes Alliance for Minority Participation headquartered at Salish Kootenai College. The program provides merit-based scholarships for up to $1050 per semester, as well as travel funds for students to attend professional conferences. Since 2009, 50 SD Mines students have received over $78K in stipends.

Scholarships
In addition to the above programs, the SD Mines Foundation has sought out and awarded over $80,000 in scholarships. These figures do not include the Tiospaye Scholarship, departmental scholarships, or other outside scholarships.

<table>
<thead>
<tr>
<th>Award Name</th>
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<tr>
<td>Native American as part of criteria</td>
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<tr>
<td>Frank F. &amp; Clare M. Aplan Native American Fund in Metallurgy</td>
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<td>Lowell A. Jobe Scholarship</td>
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<td>Pete Lien &amp; Sons Scholarship</td>
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<td>Jack (John) &amp; Winnie Shedd Scholarship</td>
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<td>Total</td>
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ACS (American Chemical Society) Scholars Program.

Currently, a chemistry major undergraduate student, became an ACS Scholar in the American Chemical Society’s Scholars Program.

The ACS awards renewable scholarships to underrepresented minority students majoring in undergraduate chemistry-related disciplines and are also intending to pursue careers in chemistry-related fields. Selected recipients are awarded up to $5,000 per academic year. Underrepresented minority high school students, college freshman, sophomores, juniors, and seniors pursuing a college degree in the chemical sciences or chemical technology are eligible to apply.
Scholarships are awarded based on academic record, career objective, leadership ability, participation in school activities and/or academic research, and community service. Completed application and required documents must be submitted by March 1st annually.

Contact Person:
Dr. Tsvetanka Filipova, Senior Lecturer and Faculty Advisor of the ACS Student Chapter, Chemistry, Biology and Health Sciences

// OTHER RESOURCES

NASA South Dakota Space Grant Consortium (SDSGC)

SD Mines is the lead institution of the SDSGC and seeks to expand opportunities for Native Americans in particular through education, research, and public services in the fields of aerospace, earth science, and supporting STEM disciplines. The goal of the SDSGC Fellowship/Scholarship program is “To administer a Fellowship/Scholarship program that offers educational and research opportunities to students from diverse backgrounds who are pursuing degrees in fields of STEM that align with NASA’s mission and those of SDSGC members and affiliates.” SDSGC’s Diversity goal is “To model diversity in all Consortium programs and activities, with an emphasis on Native Americans, which make up the state’s largest minority group.” SDSGC provided $2,446,100 in scholarships and fellowships to 793 students at nine South Dakota public, private, and tribal colleges/universities from FY2005-2019 and annually meets its objective of providing at least 15% of its awards to minority students; most of whom are Native American. Several Native American students at SD Mines have conducted 10-week summer and 16-week semester research internships at NASA Centers.

Contact:
Thomas Durkin, Deputy Director of South Dakota Space Grant Consortium

South Dakota NASA EPSCoR Program

Under a Tribal College Collaboration Grant, SD NASA EPSCoR is funding a project at SDSMT titled “Groundwater and Surface Water Interactions Modeling along the White River near Oglala, South Dakota.” The principal investigator is Dr. Liangping Li in the Department of Geology and Geological Engineering (GGE). Dr. Li will collaborate with Dr. Foster Sawyer, also in GGE, and with Charles Jason Tinant of Oglala Lakota College (OLC). The one-year grant provides $14,000 for the project, which includes support one student from OLC. The project will use NASA remote sensing data to investigate possible streamflow losses along the White Clay fault and the impact on water resources for the Pine Ridge Indian Reservation.

Contacts:
Dr. Edward Duke, South Dakota Space Grant Consortium;
Dr. Liangping Li, Principal Investigator for the Tribal College Collaboration Grant and Assistant Professor of Geology and Geological Engineering

Apex Gallery

The Apex Gallery has a tradition of exhibiting Native American artists and has shown the work of local, regional, and national tribal members.

Contact:
Matthew Whitehead, APEX Gallery Director & Lecturer of Fine Art

Museum of Geology

The Museum of Geology provides help with identification of skeletal and fossil remains for all tribal governments who ask for the Museum’s assistance when specimens of interest are found.

Contact:
Dr. Laurie Anderson, Department Head/Professor Geology and Geological Engineering, Director of the Museum of Geology
The South Dakota Board of Regents Factbook for the fiscal year of 2019 shows that American Indian students comprise of 3.05% (77 AI students) of the total student body (2,529) in the fall 2019 at SD Mines. In comparison to the previous year, there was a very slight increase from 3.01% (80 AI students) in fall 2018. Although the actual number of American Indian students decreased slightly, the percentage has increased due to a decrease in the overall student population. Also, in fall 2019, there were five American Indian students pursuing graduate degrees and two pursuing doctorates.

**The Center for Inclusion Mission Statement:**
Cultivate an inclusive campus climate that supports underrepresented populations, fosters respect for those with diverse backgrounds, and promotes cultural proficiency among faculty, staff and students.

**The SD Mines Inclusion Statement:**
South Dakota School of Mines & Technology is committed to cultivating an inclusive learning environment where faculty, staff, and students can grow and succeed. We value the diversity of unique backgrounds, experiences, perspectives, and talents within our community. It is our goal to promote a culture of respect, honor, understanding, integrity, and collaboration. It is through this diversity and inclusion that we find our strength. [https://www.sdsmt.edu/Inclusion-and-Diversity/](https://www.sdsmt.edu/Inclusion-and-Diversity/)

With the values of integrity, ingenuity, inclusion, and impact, SD Mines operates through Strategic Priorities, each with implications for American Indian support and access. [https://www.sdsmt.edu/About/Strategic-Plan/](https://www.sdsmt.edu/About/Strategic-Plan/)
# CONTACT LIST

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<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Program</th>
</tr>
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<tbody>
<tr>
<td>Anderson, Laurie</td>
<td>Department Head and Professor, Geology and Geological Engineering; Director, Museum of Geology</td>
<td>Museum of Geology</td>
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<tr>
<td>Crawford, Grant</td>
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<td>Summer REUs</td>
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<td>Duke, Edward</td>
<td>Manager of Analytical Services, Engineering and Mining Experiment Station; Professor, Geology and Geological Engineering</td>
<td>South Dakota NASA EPSCoR Program</td>
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<tr>
<td>Durkin, Thomas</td>
<td>Deputy Director of South Dakota Space Grant Consortium</td>
<td>South Dakota Space Grant Consortium</td>
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<tr>
<td>Filipova, Tsvetanka</td>
<td>Senior Lecturer, Chemistry and Applied Biological Sciences</td>
<td>Green Chemistry Outreach Program, ACS Scholarships</td>
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<tr>
<td>Herman, Jade</td>
<td>Special Projects Coordinator, Office of the President</td>
<td>Tribal School Outreach and Engagement Plan</td>
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<tr>
<td>Herrera, Jesse</td>
<td>Director of Inclusion</td>
<td>Center For Inclusion, AISES, Pre-Orientation, Mentor Program, Honoring Ceremony</td>
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<td>Johnson, Brad</td>
<td>Vice President for Development</td>
<td>Foundation</td>
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<tr>
<td>Kerk, Carter</td>
<td>Professor, Industrial Engineering; Director NSF Tiospaye Scholars Program</td>
<td>Tiospaye, ANLSAM</td>
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<tr>
<td>Li, Liangping</td>
<td>Assistant Professor, Geology and Geological Engineering</td>
<td>Groundwater and Surface Water Interactions Modeling</td>
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<td>Mahon, Pat</td>
<td>Vice President, Student Development; Dean of Students, Student Development</td>
<td>Emergency Fund</td>
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<td>Moore, Molly</td>
<td>Associate Provost for Academic Administration; Director of Admissions</td>
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<td>Rankin, Jim</td>
<td>President</td>
<td>SD Mines</td>
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<tr>
<td>Sawyer, Foster</td>
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<td>NSF OSSPEEC II</td>
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<td>West, Mike</td>
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<td>Whitehead, Matthew</td>
<td>APEX Gallery Director &amp; Lecturer of Fine Art</td>
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