



AMERICAN INDIAN SCIENCE AND ENGINEERING SOCIETY

2018 Programming Priorities





AISES Mission

The American Indian Science and Engineering Society (AISES) is a national, nonprofit organization focused on substantially increasing the representation of American Indians, Alaska Natives, Native Hawaiians, Pacific Islanders, First Nations, and other Indigenous peoples of North America in science, technology, engineering, and math (STEM) studies and careers.

2018 Programming Priorities

AISES' Approach to Native American STEM Workforce Development

- **Build Awareness and Increase Retention in K-12 STEM**

Starts the pathway by providing Native K-12 students, parents, and educators exposure to quality curriculum, programs, and opportunities to interest and engage these audience in STEM.

- **Increase Access to and Success in STEM Higher Education**

Continues the pathway through higher education by providing financial and academic support and opportunities to Native college students to increase the number of successful Native STEM majors.

- **Provide Leadership and Promote Change to Improve Professional Opportunities in STEM**

Supports the pathway to keep Natives in STEM careers through support of professional Native STEM network and career development resources.

- **Identify and Leverage Strategic Partnerships and Research in STEM**

Illuminates the path by identifying the challenges and successes in Native STEM Workforce Development through research, data collection, and partnerships with other key STEM stakeholders.

Annual Events

(Serving high school students, college students, and professionals)

Annual National Conference

The National Conference has been held annually since 1978 and is a unique, three-day event convening 2,000 Native American high school juniors and seniors, college and graduate students, educators, workforce professionals, and our corporate, government, private foundation, nonprofit, and tribal partners for professional development, networking opportunities, student and professional research presentations, workshops, awards, traditional Native American cultural events, and **the largest college and career fair in Indian Country**. Many companies also host hiring events by conducting onsite interviews. Job seekers are provided interview coaching and resume development, as well as career planning and other skills necessary to be successful in today's job market. For students considering college or graduate school, resources are provided to assist in financial planning, applying to college or graduate school, as well as information on the many STEM majors and careers available.



Annual Leadership Summit

The Leadership Summit is a two-day event held in the spring to provide Native college and graduate students as well as Native STEM professionals with leadership and professional development workshops. Much smaller than the National Conference, the Summit caps registration at 250 participants to allow for smaller sessions to provide in-depth and interactive training. Some examples include: *Maintaining Cultural Identity*, *Change Management: Managing Personal Change*, and *Bridging Native Tradition within STEM*. At the Summit, leaders of AISES College Chapters meet to plan chapter activities and finalize regional conferences. The Summit also offers the opportunity for students to meet and connect with STEM professionals for mentorship and support.



Collegiate Regional Conferences

Regional Conferences are held annually in the spring and provide an opportunity for AISES College and Professional Chapters to gather and share information, form partnerships, and network with each other and with selected presenters and partners in seven regions. Each regional conference has a number of informative sessions, mini-career fairs, poster presentations, engineering competitions, and traditional Native American cultural presentations. Native high school students, college and graduate students, and professionals attend these conferences.

K-12 Programming

Power Up Workshops

Power Up workshops are designed to boost student engagement in science fairs and to improve the quality and quantity of science fair research and projects entered at the local, national, and international level. At these workshops, students learn the process behind developing a research question, engage in hands on scientific research (similar to what is expected of a science fair project) and learn about the importance of STEM research for Native communities. Educators receive practical and on-going AISES-developed toolkits designed to support students through the science fair/STEM research process. Workshops are engaging, hands-on, grade/age appropriate, use technology and audio-visual aids, and encourage group interaction. The target audience for these in-class workshops are middle and high school students (grades 5 through 12) and their educators.



Attendance at Power Up workshops typically consists of students and educators, but may also include parents, families, and community members if conducted as an after-school activity. Workshops can accommodate from 25 to over 100 individuals, depending upon interest, availability of AISES staff and budget.

National American Indian Virtual Science and Engineering Fair (NAIVSEF)

The National American Indian Virtual Science and Engineering Fair (NAIVSEF) is a Society for Science and the Public (SSP) affiliated science fair and as such is part of the larger SSP fair network. NAIVSEF differs from other SSP-affiliated fairs in that it is a virtual fair which allows access for students who might not otherwise be able to participate. Unlike live fairs, virtual fairs do not require travel as the fair and judging are conducted online and via phone or video conference calls. Participants submit their projects as videos and slideshows online. Students from grades 5-12 can participate in the NAIVSEF. There are two categories for entrants, Senior Division (grades 9-12) and Junior Division (grades 5-8). AISES awards cash prizes to the winners of each division and winners are provided support to travel to and compete in the larger SSP fair.



Energy Challenge

The AISES Energy Challenge (EC) is an energy-specific science fair designed to engage and encourage high school and middle school students to participate in Science, Technology, Engineering, and Mathematics (STEM) education through a creative, hands-on, problem solving and engineering process in an environment similar to a science fair. Middle and high school students may compete as individuals, or as teams consisting of up to four students. All students/teams must have an adult sponsor. The sponsor can be either a parent, teacher, or mentor. Eligible students are American Indian and/or Alaska Native students in grades 7-12. Winners travel to Washington, DC to present their projects at the U.S. Department of Interior.

ENERGY CHALLENGE
For American Indian/Alaskan Native Youth



SPRK-ing Interest in Computer Science

This is AISES' newest K-12 program that combines robotics and computer programming to increase awareness and interest in STEM and Computer Science (STEM+C) among Native American students. The program engages students in hands-on STEM+C activities powered by Sphero technology, created by AISES and tailored to Native students. AISES has partnered with the toy company Sphero to bring their educational spherical robot, SPRK+, to Native American serving K-12 schools across the country. Sphero SPRK+ is easily integrated into STEM curricula, allowing even the youngest students to learn programming, engage in hands-on STEM+C activities, bridge technology and the arts, and enjoy creative discovery with their classmates. The goal of this STEM+C program is to inspire young Native minds to pursue and excel in their STEM and Computer Science education. Additionally, AISES hopes to build the capacity of educators and schools to provide cutting-edge technological STEM+C experiences for its students by providing teacher trainings, lesson plans, and all equipment necessary to incorporate Sphero in the classroom.



College and Graduate Student Programming

Lighting the Pathway to Faculty Careers for Natives in STEM Project

In 2013, AISES was awarded over \$1.5 million in funding from the National Science Foundation (NSF) to create the "Lighting the Pathway to Faculty Careers for Natives in STEM" program. The goal of this initiative is to increase the representation of Native Americans in STEM faculty positions at colleges and universities across the country. The program has created an intergenerational community of undergraduate and graduate students, postdoctoral scholars, and junior and senior faculty members. In addition to full circle mentorship, the program strives to provide students with valuable academic and professional support, travel funding, and educational, research, fellowship, and internship opportunities.



Scholarships

AISES academic scholarships help to offset tuition and other educational expenses to assist students in matriculating and moving on to the next academic or professional level. Scholarship recipients are selected from a highly competitive pool of applicants based on academic merit, recommendations, and field of study. Applicants must be part of an American Indian tribe and a member of AISES. Some of our current and past scholarship programs and sponsors include Google, Intel, Burlington Northern Santa Fe, San Manuel Band of Mission Indians, the U.S. Environmental Protection Agency, The Boeing Company, Northrup Grumman, Oracle, Naval Sea Systems Command, Lockheed Martin, Chevron, Exxon, and NextEra Energy.



Internships

The AISES Summer Internship Program provides students with a 10-week applied summer work experience at a business or government agency and an opportunity to explore career options and to develop professional-level skills. Interns gain resume-building skills and develop professional networks. In some cases, students create their own professional internship program within their discipline of study and within the parameters of the host agency. Some of our current and past internship partners include Intel, ASRC Federal Holding Company, USDA Food Safety and Inspection Service, Bonneville Power Administration, Centers for Disease Control, U.S. Bureau of Land Management, U.S. Census, U.S. Environmental Protection Agency, BMM Testlabs, and U.S. Department of Veterans Affairs.

Professional Programming

AISES is dedicated to supporting its professional members in STEM, supporting early, mid, and executive professionals in STEM fields through professional development, career opportunities, networking, research support, and opportunities to mentor and support Native students in STEM. AISES support does not end once a student graduates from college and enters a STEM career but rather provides ongoing career and professional development programming to help Native STEM professionals grow and succeed in their chosen career fields. Additionally, AISES offers a multitude of opportunities for professionals to “give-back” through mentoring and supporting Native STEM students. Programming for professionals includes: mentoring of students, scholarship review, research and science fair judging, serving as speakers and trainers at AISES events, Corporate Advisory Council service, Government Relations Council service, Professional Chapter Council service, Academic Advisory Council service, Canadian Indigenous Advisory Council service, professional development programming, career fair, Professional of the Year Awards, 15 professional chapters across the nation, and opportunities to present research.



Strategic Partnerships and Research

50K Coalition/NSF INCLUDES Initiative

AISES, along with the Society of Women Engineers, National Society of Black Engineers, and the Society of Professional Hispanic Engineers, comprise the Leadership Circle of the 50K Coalition whose mission is to increase the number of diverse engineering degree recipients to 50,000 by 2025. The Coalition received support from the National Science Foundation (NSF) INCLUDES national initiative to bring together universities, industry partners, and other professional societies working toward diversity and inclusion within engineering to join forces and pursue areas of synergy, explore lessons learned, and significantly increase the number of diverse engineering graduates. In addition to the 50K Coalition, AISES has partnered with other minority serving engineering professional societies on another NSF INCLUDES funded project to increase the diversity of the engineering professoriate by providing professional development to graduate students, post-doctoral fellows, and early-career faculty in all engineering fields.



NSF REESE Project

AISES is part of a collaborative project funded by the NSF titled “Collaborative Research to Understand the Role of Culture, Identity, Epistemology and Bi-Cultural Efficacy in American Indian Educational and Professional Success in STEM.” This project is an empirical research study using a resiliency-based framework to investigate the factors that contribute to AI/AN success and achievement in STEM education and careers. It is a partnership among AISES, the Office for Community Health (OCH) at the University of New Mexico (UNM), and Northwestern University. Results will promote understanding of how AI/AN people leverage personal and cultural assets in a way that embraces a congruency between Indigenous culture (Native science) and Western science as they achieve success in STEM. This project also serves to build the capacity of AISES to conduct research internally by creating an AISES archival database of participant information pulled from hard copy files across AISES’ 40-year history.



Tribal Nations



Tribal Nations Advisory Council

In 2017, AISES introduced a new Advisory Council, the Tribal Nations Advisory Council (TNAC). The role of the TNAC is to advise AISES in its work with Tribal Nations and will be comprised of representatives from Tribal Nations across the U.S. AISES currently has six other advisory Councils, the Corporate Advisory Council (CAC), Government Relations Council (GRC), Academic Advisory Council (AAC), Professional Chapter Council (PCC), Canadian Indigenous Advisory Council (CIAC), and the Council of Elders. Each of these Councils plays an important role in advising AISES in its work. The development of the TNAC helps to address the growing tribal STEM workforce development needs while also advising AISES in our work with representatives from Tribal Nations to help shape and guide STEM programming for Native youth in those communities. The inaugural meeting of the TNAC was held at the 2017 AISES National Conference in Colorado. Currently, TNAC has five acting co-chairs who are working to develop the council's charter. The TNAC met again at the National Center for American Indian Enterprise Development's (NCAIED) 2018 RES Economic Summit in Las Vegas in April 2018 where the NCAIED supported a reception for tribal leaders and conference participants. Currently, the TNAC has 30 members from across Indian Country.

Cheyenne River Sioux Tribe

In 2016, AISES received a four-year Native Youth and Culture Project grant from the Department of Education totaling almost \$700,000 to work with Cheyenne-Eagle Butte (C-EB) Schools and the Cheyenne River Sioux Tribe (CRST) to address barriers to college and career readiness, specifically in the fields of STEM, among American Indian students living in South Dakota. Through this project, AISES is working to increase interest and engagement in STEM subjects among students of all ages, build the capacity of C-EB Schools to support students in STEM, and generate CRST parent and community support of and engagement in STEM studies and careers, particularly for CRST youth. Improving STEM education by introducing novel and culturally relevant curriculum and programs and providing C-EB students with opportunities to grow and flourish in new environments is the core mission of this collaborative project.

Eastern Band of Cherokee Indians

The Board of Directors of the Cherokee Preservation Foundation (CPF) awarded AISES a grant for \$71,793.00 in fall 2017. The purpose of the grant is to increase interest and competency in STEM education. The grant specifically funds AISES to develop and implement STEM and Computer Science programming with students of Cherokee Central Schools (CCS) in Cherokee, North Carolina. In collaboration with the Qualla Education Council, AISES identified computer science as an area of interest for CCS. Given the CPF's commitment to education and economic development on the Qualla boundary, AISES believes computer science is one of the most important fields for Native youth to pursue as it is now an integral part of all STEM fields and is one of the fastest growing job markets.

Funding from CPF will help to build the STEM+C capacity of CCS as all equipment will remain with CCS and teachers will receive Sphero training to incorporate Sphero into their STEM curriculum. Both students and teachers from CCS attended the 2017 AISES National Conference, participating in STEM Day a pre-conference event specifically designed for pre-college students, sessions ranging from college and career exploration to scholarship opportunities and professional development sessions tailored specifically to K-12 educators, student research presentations, and a variety of social and cultural events. This grant complements AISES newest program SPRK-ing Interest in Computer Science, funded by General Motors Foundation, Motorola Solutions Foundation, and the Salt River Project.

Initiatives Developing in 2018

STEM and Business

The American Indian Science and Engineering Society in partnership with American Indian Business Leaders (AIBL) propose to create a cohort-model program bringing together higher education students and professionals who are interested in pursuing degrees and careers that combine science, technology, engineering, and mathematics (STEM) and business. The purpose of this program is to encourage and increase the development of STEM businesses and/or creating, developing, or expanding STEM business positions within tribes and tribal communities through participation in professional and educational development, connection to career resources, financial support, and mentorship.

Both AISES and AIBL recognize the increasing need to support Native people in STEM and business in order to truly strengthen the infrastructures and workforce of Indian Country. In particular, AISES and AIBL do not view STEM and business studies and careers as mutually exclusive, and rather that the two must often be cultivated together in order to bring effective STEM and business solutions to fruition. It is important to combine STEM and business to ensure that Native people can generate entrepreneurial opportunities that will allow them to develop community-based businesses that support their tribal communities. Building STEM capability in-house and in-community allows tribes and Native communities to further control decision-making, policy development and initiatives, avoiding or reducing non-Native outsourcing, and strengthening community control of community assets. In short, Native STEM business and workforce development is a key component of tribal sovereignty and self-determination.

Native Girls and Women in STEM and Computer Science (CS)

There are significant challenges in Indian Country and those challenges seem to disproportionately affect Native women and children, especially girls. AISES seeks to change this narrative by providing services and programs to heal from past and current trauma, through access to opportunities and community. AISES proposes a 10-year project focused on engaging at-risk Native American girls and women in STEM and Computer Science to promote positive change in the lives of Native girls and women, build better Native communities with girls and women as change-makers, and increase the diversity of the STEM and Computer Science workforce both within and outside of tribal Nations.



AISES intends to develop and launch girl-focused STEM and Computer Science mentorship program with girls aged 17-19 mentoring groups of girls aged 10-12 in three tribal communities, including an urban Indian population. Older girls will lead and facilitate girl groups comprised of at-risk young girls aged 10-12, identified as off-track using the Girl Roster developed by the Population Council. The girl groups will engage in STEM and computer science, financial management, life skills, and college and career readiness activities. AISES will recruit older girls who are established and respected in the community to lead and facilitate the girl groups. AISES will conduct all program development and will provide trainings for the girl group mentors. In addition to the girl groups, AISES will form annual cohorts of post-high school Native women interested in STEM and CS. Using the cohort model, AISES proposes to provide workforce development (i.e. technical training, professional skill building, resume and interview support, etc.) for Native women interested in STEM and CS fields who are both in and out of college. AISES believes this cohort-model program will create much needed community among young women as they strive to enter fields in which they are currently and historically underrepresented. Additionally, the mentor and mentees involved in the girl groups will be invited and encouraged to join the young women's cohort as they graduate from high school to encourage continued interest and persistence in STEM and CS.



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