A new year and new opportunities for partnerships and collaborations

The beginning of a new year brings with it feelings of excitement, anticipation, and a renewed sense of energy. At the ND EPSCoR State Office, we see the coming 12 months as a year of opportunity for expanding our partnerships and collaborations. Strong partnerships lay the foundation for future growth. These positive relationships are vital to supporting STEM education and workforce development in ND.

The ND EPSCoR State Office partners with entities that reach across the state to support efforts to broaden the STEM pathway. These alliances also provide a way to enhance the work of the ND EPSCoR State Office by reaching into underserved communities and developing long-term relationships. Since 2019, the ND EPSCoR State Office has partnered with 23 ND companies to provide STEM internships to 45 students through our **Students in Technology Transfer And Research** (STTAR) program. Summer 2022 industry applications are now open, see the article on page 3.

Since July of 2020, the State Office has partnered with **North Dakota's Gateway to Science**. Through this partnership, hands-on STEM activities and informal lessons are available to underrepresented and underserved schools. This is made possible through the use of the On the Go Van. You can read more about the partnership between the ND EPSCoR State Office and North Dakota's Gateway to Science on our partnership page and in the July 2020 issue of News & Notes. Effective partnerships like this represent meaningful connections and resources as we plan for the future and build on our shared knowledge.

Additionally, the ND EPSCoR State Office is proud to be developing a partnership with **Emerging Digital Academy**. The mission of Emerging Digital Academy is to serve its students, the region's technical community, and the state's economy by addressing the growing demand for skilled software developers. Emerging Digital Academy fulfills its mission by teaching its students how to learn new technologies to equip them for today's needs and keep their skills relevant, by hosting events and workshops within the region, and by using state resources, like those from the ND EPSCoR State Office, to develop a talented technology workforce for ND.

In addition to on- and off-site events and workshops, Emerging Digital Academy currently offers a 20-week immersive technical training course in which students learn the concepts of coding and software design and how to use cutting-edge software tools to build modern web applications. You can read more about this at Emerging Digital Academy partnership.

The continued development and support of partnerships and collaborations is one crucial aspect of the ND-ACES (New Discoveries in the Advanced Interface of Computation, Engineering, and Science) NSF RII Track-1 cooperative agreement. The Partnerships and Collaborations PROSPER (PROmoting Sustainable Partnerships in Education and Research) element works with all ND-ACES personnel to increase professional relationships with industry and research collaborators outside of ND-ACES. This initiative builds research infrastructure and strengthens ND's research competitiveness by developing these relationships.

The goal is to ensure sustained educational and economic impact beyond the project through broadened collaborations leading to new lines of inquiry and funding; increased private sector interactions addressing near- and long-term commercialization potential; expanded researcher and student internship opportunities bridging science and practice; and, implemented new knowledge and technology allowing ND to expand its economic base.

The beginning of a new year is an exciting time as we look forward to the opportunities 2022 will bring. Best wishes for a productive year filled with discoveries and partnerships! I hope that you are, and will continue to be, well.

Regards,
Kelly A. Rusch, Ph.D., P.E., BCEE
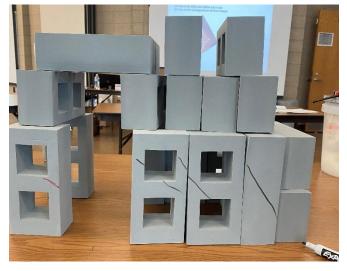Executive Director
ND EPSCoR State Office

NATURE program Sunday Academies

The Nurturing American Tribal Undergraduate Research and Education (NATURE) Sunday Academy program for the 2021-2022 school year began in October and will continue through April. The Sunday Academy Program generates interest in STEM among American Indian students. Once a month during the academic year, middle and high school students are brought together one Sunday each month to explore practical day-to-day problems involving STEM requiring them to analyze the problem, and seek potential solutions.

Sunday academy sessions are held at each of the participating Tribal Colleges/Universities (TCUs) and are hosted by TCU STEM faculty, who serve as the NATURE Coordinator at each site. Activities usually begin at 10, or 11:00 am and last up to four hours, including lunch. Cultural relevance and hands-on activities are emphasized in all topic areas. Sessions are developed and delivered by TCU, NDSU, and UND faculty.

Last month, **Mijia Yang** (Associate Professor and Associate Chair, Civil Engineering, NDSU) traveled to Sitting Bull College (SBC) to deliver his activity titled, "Enter or Not Enter a Building After Fire: Post-disaster Structural Safety Assessment for Immediate Rescue Through UAV Acquired Images," to middle and high school students.

SBC students made black marks on the building they built using blocks. These marks indicated the burned regions and could be identified.

During Yang's activity, students learned how to fly UAVs (unmanned aerial vehicles, which are commonly known as a drones), to take photos in different formats and transfer images from cameras to computers, and to process images and identify the extent of fire damage.

"Students had fun and enjoyed the activities: flying drones (UAVs), building structures, capturing the burned areas, and tracing vibrations of aluminum bars through computer visions," said Yang.

Yang enjoys the experience of working with the NATURE program and providing advanced science and technology demonstrations to students. "Students were amazed by how much computer vision can do," he added.

For information about NATURE Sunday Academy, contact **Raymond Burns**, the ND EPSCoR State Office Tribal Partnerships Manager, by email or calling 701-231-8606. You can also visit our NATURE Sunday Academy page for additional information.

2022 STTAR business applications open

The Students in Technology Transfer And Research (STTAR) program, an ND EPSCoR State Office-sponsored, state-funded program, offers ND-based businesses the opportunity to cost-share student internship salaries during the summer of 2022. The application window for 2022 is now open. ND companies and organizations hire great students who use their academic training and

STTAR 2021 participants operate a drone as a part of their internship.

expertise to help find solutions to technical challenges while sharing the salary costs with the ND EPSCoR State Office. ND EPSCoR state-funded cost-sharing provides $7.50 per hour toward the student's summer salary.

The STTAR program provides an opportunity to gain valuable work experience. Funding is limited for 2022, and applications are accepted on a first-come, first-served basis. The qualifying criteria include:

- The business must be a ND company or have a ND-based office;
- The work/project must have a science, technology, engineering, or math (STEM) focus for the internship; and

- The internship must be a minimum of eight weeks and a maximum of 12 weeks.

The ND EPSCoR contribution for the internship is up to $3,600 per individual student. For more information or to obtain a business partner application, please visit the STTAR program webpage or email ND EPSCoR.

The STEM at Home video series continues

The ND EPSCoR State Office brings fun STEM projects to families at home via our YouTube channel. STEM at Home features simple and exciting STEM projects for young students to help teach essential critical thinking skills and potentially spark a lifetime interest in STEM.

Our entire collection of STEM project videos and shopping lists is available here. Also, watch our newest winter-themed video in our STEM at Home series, Make Your Own Snow, linked below.

Get the complete shopping list for the Make Your Own Snow activity here.

Subscribe to our YouTube channel and visit our STEM activities page for shopping lists. You can also visit our STEM Education Portal and NATURE Sunday Academy pages for more activities and lesson plans that strengthen the STEM pathway for students across ND.

Budget revisions

As 2022 begins, our thoughts turn to the spring semester and planning the end of several awards. ND-ACES wraps up its second year on June 30 and transitions to year three on July 1. The ND EPSCoR State Office STEM awards end in May, and the 2021-2022 fiscal year ends in June.

With all of these "endings," it is important to remember that approved project scope, budgets, and justifications continue to determine how funds can be spent. For example, supplies purchased with award funding must be used within the award period in a manner that benefits the award and cannot be used to restock supplies or purchase items for research that will take place after the award end date. The goal to avoid leaving funds on the table is not a valid justification for making an expenditure that is outside the award scope or that will benefit a period outside of the award.

Occasionally, the need arises to rebudget funds as an award draws to a close, allowing for reallocations to categories that most benefit the award objectives. For example, the need for supplies typically drops off at the end of an award, but additional publication funding may be required to disseminate research results. Additionally, student funding may need to be adjusted as final research efforts are conducted. Therefore, during the next several months, it is critical that all remaining funds is used in a way that provides maximum benefit to achieving the award objectives. Please get in touch with ND EPSCoR if you have any questions.

CIRCLES Alliance survey and interview opportunities

In October 2020, the ND EPSCoR State Office joined five other EPSCoR states (Idaho, Montana, New Mexico, South Dakota, and Wyoming) in a National Science Foundation-funded collaborative research project that forms an Alliance to connect with tribal community members within those states to gain a better understanding of each community's definition and perspective of STEM (science, technology, engineering, and mathematics). Initially, Alliance members planned to visit each tribal community, but with the COVID pandemic continuing, the Alliance has decided to continue to make virtual connections.

Using a common set of questions across the six-state CIRCLES (Cultivating Indigenous Research Communities for Leadership in Education and STEM) Alliance, participants input is being gathered through virtual interviews over Zoom or through an online survey with tribal community stakeholders to gain their perspective on how indigenous based STEM education is currently being incorporated or might be incorporated in the future, to support student STEM

learning. To participate in an interview or survey, you must be 18 years or older.

The ND EPSCoR State Office has created a link to a 90-second video that describes these efforts. The anonymous online survey is available at this link. Additionally, ND EPSCoR is conducting individual virtual interviews. If you would prefer to participate in an individual interview, please contact ND EPSCoR at ndepscor@ndus.edu, or call 701-231-8400.

This effort aims to foster better connections with tribal communities and support STEM educational programming. Working toward that goal, the ND EPSCoR State Office humbly requests your assistance in completing this survey or contacting us to set up a virtual interview. The CIRCLES Alliance believes this is a particularly poignant time to reflect on observations regarding indigenous based STEM education as the COVID pandemic has brought some new challenges into focus. Learn more about the North Dakota CIRCLES effort here.

Welcome the new Business Manager

Please join us in welcoming the ND EPSCoR State Office's new Business Manager, **Eric Exner**. Exner comes to the ND EPSCoR State Office from the North Dakota University System where he was a Business Analyst within Core Technology Services.

Exner's responsibilities include the oversight of all financial transactions related to ND EPSCoR and the ND EPSCoR State Office at all participating campuses.

Exner officially begins his position on January 20, 2022.

Events and trainings

ND EPSCoR
2022 State Conference

Wednesday, April 6, 2022
Alerus Center in Grand Forks, ND

The 2022 ND EPSCoR Annual Conference will be on Wednesday, April 6, 2022, at the Alerus Center in Grand Forks, ND. The ND EPSCoR Conference is an annual event that brings together faculty, students, and the community to celebrate the STEM endeavors taking place within ND EPSCoR's participating institutions.

Accommodation is available at the Canad Inn and surrounding hotels.

Register here. This registration link is for both virtual content access and in-person attendance. If attending in person, please register by noon on Friday, March 18, 2022.

Submit a virtual poster here.

Poster submissions are welcome from students and faculty from our participating institutions. The deadline to submit a virtual poster via the poster submission link is noon on Friday, March 4, 2022.

View the virtual poster guidelines here.
View the agenda here.

Additional resources for poster authors and presenters are available on our templates and information page and our logo page.

Visit the ND EPSCoR State Conference information page often. More details to come as the event approaches.

3 Minute Thesis Training

Join us on January 25th at 1:00 pm for this free virtual workshop where you'll learn how to make your research presentations quick, clear, and engaging, featuring Dr. Milosavljevic-Ardeljan (University of New Hampshire). Register here.

Responsible Conduct of Research (RCR)

RCR training is available upon request to augment initial campus or Collaborative Institutional Training Initiative (CITI) RCR trainings. Please contact ND EPSCoR to schedule.

News of note

ND EPSCoR ND-ACES researchers to be Co-PIs on new NSF EPSCoR Track-2 cooperative agreement

Congratulations to NATURE Sunday Academy faculty **Ying Huang** (NDSU), PI and to ND EPSCoR ND-ACES researchers **Trung Bao Le** (NDSU) and **Kerry Hartman** (NHSC), co-PIs, on a recently awarded NSF EPSCoR Track-2 cooperative agreement that will create an artificial intelligence research center focused on sustainable energy. Also listed as co-PIs on the award is past ND EPSCoR NATURE Coordinator, **Eakalak Khan** (University of Nevada Las Vegas), and Haitao Liao (University of Arkansas).

The ND EPSCoR State Office makes STEM awards to participating institutions

In its Fall 2022 STEM awards, the ND EPSCoR State Office made 10 awards to three participating institutions totaling $419,474; including six equipment awards to three campuses totaling $398,835 and four equipment repair awards to one campus totaling $20,639.

Participating campuses funding included: one award to UTTC for $60,831; three awards to UND for $188,004; and six awards to NDSU for $170,639.

Click here for a complete list of awardees. Please join the ND EPSCoR State Office in congratulating these awardees.

Funding opportunities

Funding Opportunities come from three sources:
1. The National Science Foundation (NSF)-funded New Discoveries at the Advanced Interface of Computation, Engineering, and Science (ND-ACES) RII Track-1 cooperative agreement, which consists of two broad components: 1) Center for Cellular Biointerfaces in Science and Engineering (CCBSE), which consists of three research pillars: materials design, cellular systems, and computational approaches and 2) PROmoting Sustainable Partnerships in Education and Research (PROSPER), which consists of four connected project elements: education and workforce development, broadening participation, partnerships and collaborations, and communication and dissemination.
2. ND EPSCoR State Office
3. EPSCoR and EPSCoR-like federal funding agencies, which include: Department of Energy (DOE), National Aeronautics and Space Administration (NASA), National Institutes of Health (NIH), NSF, U.S. Department of Agriculture (USDA), and Department of Defense (DoD).

Track-1 ND-ACES: Rural Student Teaching Experience (RSTE) Program

The ND EPSCoR National Science Foundation (NSF)-funded RII Track-1 cooperative agreement New Discoveries in the Advanced Interface of Computation, Engineering, and Science (ND-ACES) Rural Student Teaching Experience (RSTE) program provides unique learning experiences for up to two teacher candidates. The goal of the RSTE program is to provide an exceptional learning experience for teacher candidates in a rural school and community while they complete the requirements of their undergraduate programs. For Fall 2022, the ND EPSCoR RSTE program will provide support for two STEM teacher candidates while they complete their one-semester student teaching internship in a rural North Dakota school. For details, see the PDF download: Request for Applications.

Application deadline: noon on January 28, 2022

Track-1 ND-ACES: Doctoral STEM Teaching Assistantship NDSU/UND ONLY

Under ND-ACES, the Doctoral STEM Teaching Assistantship program is designed to: 1) increase NDSU/UND doctoral students' understanding of and experience in undergraduate STEM teaching and 2) provide course release time to the Tribal College/University (TCU), Primarily Undergraduate Institution (PUI), and Master's College/University (MCU) faculty/instructors/CCBSE researchers so that they are able to spend additional time conducting their research. The Doctoral STEM Teaching Assistantship Program is a semester-long teaching placement (during Spring 2022

or Fall 2022) that will take place at a CCBSE-participating TCU, PUI, or MCU. Under the direction of the faculty/instructor/CCBSE researcher on those campuses, doctoral students will teach one course determined collaboratively between the doctoral student, the TCU/PUI/MCU faculty/instructor, and the institution. For more information, see the [Request for Applications]. Please be aware of the following application deadline:

- Fall 2022 Award Dates: August 1 – December 15, 2022 / Application Due: February 28, 2022

Undergraduate Research Assistantship (URA) Program

This program gives current junior and senior undergraduate students pursuing a B.S. STEM degree at a four-year institution (or a two-year institution granting B.S. STEM degrees) an opportunity to perform research within the National Science Foundation (NSF)-funded New Discoveries in the Advanced Interface of Computation, Engineering, and Science (ND-ACES) Center for Cellular Biointerfaces in Science and Engineering (CCBSE).

The URA is a six-month award that is renewable for up to one additional year. URA awardees will conduct up to 18 months of research under the direction of a ND-ACES CCBSE researcher. For more information, see the [Request for Applications].

Application Deadline: Open until funds are exhausted

Distributed Research Experience for Undergraduates (dREU)

Under this program undergraduate students – from the nine ND EPSCoR ND-ACES RII Track-1 participating campuses - three Primarily Undergraduate Institutions (PUIs), one Master's College/University (MCU), three Tribal Colleges/Universities (TCUs) located in ND, or the two Research Universities (RUs) – are required to work in the ND-ACES Center for Cellular Biointerfaces in Science and Engineering (CCBSE) alongside NSF Track-1 faculty researchers on their CCBSE cutting-edge research projects in materials design, cellular systems, or computational approaches. Women, minorities underrepresented in STEM, persons with disabilities, first generation college students, economically disadvantaged or rural populations are strongly encouraged to apply. For more information, see the [Request for Applications].

Application Deadline: Open until funds are exhausted

ND NASA EPSCoR R3 CAN RFP

In response to the FY 2022 [NASA Notice of Funding Opportunity (NOFO) EPSCoR Rapid Response Research (R3) Announcement Number: NNH22ZHA004C], the [North Dakota NASA EPSCoR] (Established Program to Stimulate Competitive Research) is soliciting pre-proposals from faculty at [affiliate institutions] specifically designed to promote and expand NASA research in North Dakota. Following preliminary proposal selection by ND NASA EPSCoR, the selected pre-proposal team(s) will work directly with the ND NASA EPSCoR office to submit a full proposal to NASA via NSPIRES.

The full RFP, online submission form, and budget sheet can be found in the RFP announcement on the [ND NASA EPSCoR website].

Pre-proposals are due Noon, 1/24/2022.

EPSCoR Research Infrastructure Improvement Program: Bridging EPSCoR Communities (RII-BEC)

The Established Program to Stimulate Competitive Research (EPSCoR) is designed to fulfill the mandate of the National Science Foundation (NSF) to promote scientific progress nationwide. Jurisdictions are eligible to participate in the NSF EPSCoR Research Infrastructure Improvement (RII) Program based on their level of total NSF support over their most recent five years. Through this program, NSF facilitates the establishment of partnerships among academic institutions and organizations in governmental, non-profit, and commercial or industrial sectors that are designed to effect sustainable improvements in a jurisdiction's research infrastructure, Research and Development (R&D) capacity, and hence, its R&D competitiveness. For details, [see the program solicitation]. Please be aware that some campuses may have internal guidelines related to this RFP.

Proposals are due April 4, 2022

Department of Defense EPSCoR Capacity Building

The DEPSCoR Capacity Building competition objectives are to jumpstart capability development in the State/Territory through increased human, technical, and management resource and to achieve excellence in a DoD-relevant research area through funding to support equipment, education, research, and other relevant activities.

Grants awarded under this program are intended to support the strategic objectives of IHEs (either individually or in partnership with others) in DEPSCoR States/Territories to achieve basic research excellence in areas of high relevance to the DoD. Proposals will

vary depending on technical field and geographic region. View the grant opportunity details here. Slides from Summer 2021 info sessions are available here.

- Due February 22, 2022

Department of Defense EPSCoR Research Collaborations

The DEPSCoR competition intends to encourage collaborations on basic research projects of interest to the Department. The program is structured to form a 2-person team between 1) a researcher who has never served as a principal investigator (PI) on a prior DoD-funded award and 2) an investigator who will provide mentorship and has served as a PI on a DoD-funded research award actively between 1 October 2014 and 30 September 2021. View the grant opportunity details here. Slides from Summer 2021 info sessions are available here.

- Due February 22, 2022

Department of Defense: DEPSCoR Regional DoD Day

The Department of Defense (DoD) has asked the University of South Dakota to host a regional DEPSCoR DoD Day, where DoD program managers will provide information about the DEPSCoR program and general information about working with the DoD. The regional DEPSCoR Day will be held in Spring of 2022 in Vermillion, SD. For more information, please see: DEPSCoR Regional DoD Day

NSF: EPSCoR Workshop Opportunities

EPSCoR is designed to fulfill NSF's mandate to promote scientific progress nationwide, and NSF EPSCoR continually welcomes proposals for workshops in Solicitation NSF 19-588. These workshops focus on multi-jurisdictional efforts of regional to national importance related to EPSCoR's goals and NSF's mission. For more information, please see the RFP: EPSCoR Workshop Opportunities

Acronyms

Participating Institutions:
- Master's College/University (MCU)
  - Minot State – Minot State University
- Primarily Undergraduate Institutions (PUIs)
  - DSU – Dickinson State University
  - Mayville State – Mayville State University
  - VCSU – Valley City State University
- Research Universities (RUs)
  - NDSU – North Dakota State University
  - UND – University of North Dakota
- Tribal Colleges/Universities (TCUs)
  - CCCC – Cankdeska Cikana Community College
  - NHSC – Nueta Hidatsa Sahnish College
  - SBC – Sitting Bull College
  - TMCC – Turtle Mountain Community College
  - UTTC – United Tribes Technical College

Funding:
- National Science Foundation (NSF) EPSCoR Research Infrastructure Improvement (RII) Track-1 Collaborative Agreements
  - ND-ACES – New Discoveries in the Advanced Interface of Computation, Engineering, and Science (NSF OIA #1946202)
- NSF Collaborative Research
  - CIRCLES Alliance - Cultivating Indigenous Research Communities for Leadership in Education and STEM Alliance (NSF OIA #2038196)
- ND EPSCoR State Office
  - STEM programming identified within the newsletter and state match funding for ND-ACES

Acknowledgement

Stay in touch

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