NDSU | COLLEGE OF ENGINEERING

COLLEGE HAPPENINGS

January 23, 2024

FROM THE INTERIM DEAN

Updates on the CoE Building Project

Over the past several months, progress has continued to be made on both the design and the fundraising for the new Center for Engineering and Computational Sciences. We have received enthusiastic support from students, faculty, staff, alumni, and industry partners for this new facility, which will provide a transformational experience in our ability to meet our objectives of excellence in education, research, and service. Thanks to all of you who have provided feedback and advice throughout the design phase of the building. We will continue to solicit your input as we refine the plans for the new facility.

The design team, led by Zerr-Berg Architects of Fargo and BWBR of St. Paul, has gone to great lengths to incorporate the vision and goals that we identified for the building. However, due to the significant escalation in construction costs experienced over the past year, our initial design came in over-budget by approximately 10%, requiring us to reevaluate and reprioritize the spaces in the CECS in order to slightly reduce the size of the facility. Fortunately, through some innovative approaches, our design team has been able to cut costs while still maintaining our core objectives to promote interdisciplinary learning and research opportunities for our students and faculty. I am excited about the future possibilities that we will gain once this project is completed!

The fundraising efforts have also continued to show great success thanks to the hard work by our team at the NDSU Foundation. We have already raised over 50% of the funds needed to unlock the state match, and we have several proposals pending with industry and private donors that have indicated a strong interest in backing this project. Our CoE Advisory and Advancement Board has been instrumental in building support for the facility, and I am immensely grateful to our development officers and the staff at the Foundation for prioritizing this building project among all the pressing needs across the university.

In the coming months, we will be holding open forums with faculty, staff, and students to collect more input on the design of the facility. I encourage all of you to participate in these meetings and provide your feedback and ideas. In addition, we have created a website for the building project (https://www.ndsu.edu/coe/cecs/) in which we will regularly post updates regarding the design, construction, and fundraising efforts. Check this website often for the latest information. In the meantime, if you have ideas, suggestions, or questions about the building project, please don't hesitate to reach out to me directly. I welcome any input you may have!

Alan R. Kallmeyer, Ph.D.
Interim Dean | College of Engineering

IN THE NEWS

NDSU volunteers help pack over 500,000 meals for nonprofit

College of Engineering launches Industry Connections

Graduation List Fall 2023

Dean's List Fall 2023

NDSU hosts robotics competition for middle and high school students

CONGRATULATIONS

Please let *College Happenings* know about honors, awards, new grants and other announcements so we can share them with other faculty and staff.

UPCOMING EVENTS

Wednesday, February 7, **Spring Career Expo**. The Spring Career Expo provides a great opportunity for students to meet a wide variety of employers. Employers who attend are actively looking for student talent to fill both full-time positions and internships/co-ops. 11:00 a.m. – 3:00 p.m. at the Fargodome.

Thursday, February 8, **Astronaut Scholarship Celebration**. NASA Astronaut Joe Tanner and officials from the Astronaut Scholarship Foundation will visit NDSU to honor recent Astronaut Scholarship recipient and College of Engineering student Jacob Sundberg. 3:30 – 5 p.m. NDSU Alumni Center.

ENGINEERING AMBASSADOR MEMBERSHIP DRIVE

New member recruitment for the **Engineering Ambassadors** is underway. New members are needed from each department in the college. Applications are due by Friday, February 9th at 5:00PM. The membership application can be completed using this Google Form.

Engineering Ambassadors are a distinguished group of undergraduate students selected to represent the College of Engineering at events for alumni, industry leaders, prospective students, and current students. Applicants must:

- Be enrolled as an undergraduate student in the college (at least a 2nd semester freshman and graduate no earlier than Dec. 2025)
- Have a minimum cumulative GPA of 2.75
- Be willing to make a 3 semester commitment (minimum) to the organization

New members are selected through a competitive application and interview process based on scholarship, communication skills, enthusiasm, honesty, leadership and knowledge of the college and university. If you know a student who would make a great Ambassador, please encourage them to apply.

TAPESTRY OF INCLUSION NOMINATIONS

Do you know a student, alum, faculty member, or staff member who actively promotes inclusion and campus or in the community? Consider nominating them for the Tapestry of Inclusion.

What is the Tapestry of Inclusion?

- A textile mosaic that recognizes **students, faculty, staff, and alumni** for the contributions they are making to diversity both at NDSU and within the community.
- Inductees promote, facilitate, and advocate for people from at least one of the following categories:
    - Age
    - Ethnicity/Country of Origin

- Gender Expression/Identity
- Mental and Physical Ability
- Race
- Socioeconomic Status
- Religion
- Sex
- Sexual Orientation
- Veteran Status

How do I nominate someone?

1. Fill out the Nomination Survey at the following link: Survey Link
2. Contact two (2) additional individuals to complete the same survey for your nomination.
    a. *Note: One (1) nomination must come from a current NDSU student.*
    b. *Note: Three (3) total nominations must be submitted for the individual to be considered for induction.*

Nomination deadline is Friday, February 23rd, 2024 at 11:59PM.

SPRING 2024 RESEARCH WORKSHOPS

Students (undergraduate and graduate) and mentees/postdocs are encouraged to attend the Spring 2024 Research Workshops. Make sure to let them know lunch is included!

Poster Preparation and Abstract Writing Workshop

- Thursday, February 29
- 11:00 a.m. to 12:30 p.m.
- Location: Memorial Union – Hidatsa Room

Topic: How to write an abstract and prepare a poster. This workshop is presented by the Center for Writers.

Register >> here by Friday, February 23

NDSU DAY OF HONOR

NDSU Day of Honor commemorates the lives of NDSU students, faculty, and staff who have passed away during the 2023 calendar year. The annual ceremony, first held in 2013, offers attendees closure, reverence, and a sense of community in remembering those no longer with us.

The NDSU Day of Honor memorial service will be held on Tuesday, February 13, 2024, at 2:00 p.m. in the Oceti Sakowin Ballroom. The service will be streamed via Zoom for those who wish to join virtually. All NDSU students and employees, as well as family and friends of the honorees, are invited.

If you know of a member of our campus community who passed away in 2023, please visit the **NDSU Day of Honor webpage** to complete a submission form. Submission forms will be accepted through Friday, January 26th.

APPLICATIONS FOR AI SUSTEIN SUMMER REU NOW OPEN

The AI SUSTEIN Program ("Artificial Intelligence on Sustainable Energy Infrastructure Network") is led by North Dakota State University in collaboration with the University of Arkansas, UNLV, and Nueta Hidatsa Sahnish College, to establish collaborative research, workforce development, and education to investigate the potential of Artificial Intelligence (AI) as a driving force for bringing about changes to infrastructures and industries.

This program will feature a 2024 summer research experience in STEM fields including manufacturing engineering, civil & environmental engineering, electrical engineering, computer engineering & science at UNLV. The program is open to undergraduate students currently pursuing a degree at a college or university with an expected graduation date after December 2024.

Applications are due by February 4, 2024.

Learn More >> https://etap.nsf.gov/award/177/opportunity/5648

FUNDING OPPORTUNITIES

NSF: Emerging Frontiers in Research and Innovation (EFRI-2024/25) Biocomputing through EnGINeering Organoid Intelligence (BEGIN OI)

The EFRI Biocomputing through EnGINeering Organoid Intelligence (BEGIN OI) [NSF 24-508] solicitation supports foundational and transformative research to advance the design, engineering, and fabrication of organoid systems that are capable of processing information dynamically while interfacing with non-living systems. EFRI BEGIN OI supports a broad interpretation of *in vitro* biological "intelligent systems" to include capture of real-world input, autonomous processing in an engineered biological construct, and generating an output that drives an engineered system. The EFRI BEGIN OI solicitation asks investigators to define the bounds of "intelligence" and "learning" needed to achieve responsive and adaptive biological computing and control in engineered systems.

Upcoming Deadlines:

- *Letter of Intent (required): January 17, 2024; Proposal Deadline: February 22, 2024*
- *Letter of Intent (required): September 12, 2024; Proposal Deadline: December 12, 2024*

NSF: Formal Methods in the Field (FMitF)

FMitF [NSF 24-509] encourages close collaboration between two groups of researchers. The first group consists of researchers in the area of formal methods, which, for the purposes of this solicitation, is broadly defined as principled approaches based on logic and mathematics to specification, modeling, design, analysis, implementation, abstraction, verification, synthesis, and optimization of systems, networks and applications. The second group consists of researchers in the "field," which, for the purposes of this solicitation, is defined as any area within computer and information science and engineering that would benefit from developing and applying formal methods in their research.

There are Three Tracks:

- Track I – Research Proposals
- Track II – Transition to Practice (TTP) proposals
- Track III – Education Proposals

Deadline: February 20, 2024

RECENTLY AWARDED GRANTS

- Yan Zhang (Principal Investigator). Understanding Pulsatile Helical Flow: Scaling, Turbulence, and Helicity Control. $304,842 from the National Science Foundation. 1/1/2024 -12/31/2026.
- Yao Yu (Principal Investigator). Multi-source/Thermal-storage Heat-pump Design and Universal Controller - EnergyPlus Model Development. $9,995 from the Academics For The Future of Science. 1/1/2024 - 5/31/2024.

RECENTLY SUBMITTED PROPOSALS

- Yao Yu (Principal Investigator), Adam Curtis Gladen (Co-PI), Mijia Yang (Co-PI). NSF: SBIR: An Innovative Building Foundation Design with Phase Change Materials for Maximizing Thermal Energy Storage. $90,511 from the National Science Foundation. 8/1/2024 - 7/31/2025.
- Ademola Monsur Hammed (Principal Investigator), Andriy Voronov (Co-PI). Development of Nanobiocatalysts for Dry Bean Protein Hydrolysate Extraction. $118,638 from the Agricultural Marketing Service. 10/1/2024 - 9/30/2026.
- Qi Zhang (Principal Investigator), Juan Osorno (Co-PI), Xin Sun (Co-PI). Using High Throughput Phenotyping to Improve Dry Bean Breeding Efficiency for Waterlogging and Drought Tolerance. $166,897 from the Agricultural Marketing Service. 10/1/2024 - 9/30/2026.
- Xinhua Jia (Principal Investigator), Harlene Hatterman-Valenti (Co-PI). Smart irrigation for vegetable production at Gethsemane Growing Together community garden. $135,137 from the Agricultural Marketing Service. 10/1/2024 - 9/30/2026.
- Clairmont Clementson (Principal Investigator), Kenneth Hellevang (Co-PI). Investigating suitable storage time and condition for Pinto beans. $142,158 from the Agricultural Marketing Service. 10/1/2024 - 9/30/2026.

RECENT PUBLICATIONS

For 2024, 20 publications by authors with the College of Engineering affiliation have appeared in various journals, according to the ISI Web of Science and submissions from faculty. Here are some of the most recent publications:

- Behshad, Yasaman, Mohammad Pazhang, Saeed Najavand, and Mohammad Sabzi. 2023. “Enhancing Enzyme Stability and Functionality: Covalent Immobilization of Trypsin on Magnetic Gum Arabic Modified Fe_3O_4 Nanoparticles.” *APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY*, December. https://doi.org/10.1007/s12010-023-04830-1.
- Grabowski, Theresa, Daniel Gerner, Fardad Azarmi, Martin McDonnell, and Uchechi Okeke. 2023. “Microstructural Evaluation of Tungsten Carbide Cobalt (WC-17Co) Alloy Deposited by High-Velocity Oxygen Fuel, High-Velocity Air Fuel, and Cold Spraying Technologies.” *JOURNAL OF THERMAL SPRAY TECHNOLOGY*, December. https://doi.org/10.1007/s11666-023-01707-x.
- Han, Qiang, Lianqing Xue, Tiansong Qi, Yuanhong Liu, Mingjie Yang, Xinyi Chu, and Saihua Liu. 2024. “Assessing the Impacts of Future Climate and Land-Use Changes on Streamflow under Multiple Scenarios: A Case Study of the Upper Reaches of the Tarim River in Northwest China.” *WATER* 16 (1): 100. https://doi.org/10.3390/w16010100.
- Pathak, Harsh, C. Igathinathane, Kirk Howatt, and Zhao Zhang. 2023. “Machine Learning and Handcrafted Image Processing Methods for Classifying Common Weeds in Corn Field.” *SMART AGRICULTURAL TECHNOLOGY* 5 (October): 100249. https://doi.org/10.1016/j.atech.2023.100249.
- Perez-Quesada, Gabriela, Nathan P. Hendricks, and David R. Steward. 2024. “The Economic Cost of Groundwater Depletion in the High Plains Aquifer.” *JOURNAL OF THE ASSOCIATION OF ENVIRONMENTAL AND RESOURCE ECONOMISTS* 11 (2): 253–85. https://doi.org/10.1086/726156.
- Rai, Nitin, Yu Zhang, Maria Villamil, Kirk Howatt, Michael Ostlie, and Xin Sun. 2024. “Agricultural Weed Identification in Images and Videos by Integrating Optimized Deep Learning Architecture on an Edge Computing Technology.” *COMPUTERS AND ELECTRONICS IN AGRICULTURE* 216 (January): 108442. https://doi.org/10.1016/j.compag.2023.108442.
- Venkataraju, Akhil, Dharanidharan Arumugam, Calvin Stepan, Ravi Kiran, and Thomas Peters. 2023. “A Review of Machine Learning Techniques for Identifying Weeds in Corn.” *SMART AGRICULTURAL TECHNOLOGY* 3 (February): 100102. https://doi.org/10.1016/j.atech.2022.100102.

See your name on this list? Help us get the word out about your amazing work by submitting it as a **Breakthrough Alert**. **This online form** is an easy, step-by-step guide for summarizing published research for the general public.

College Happenings is distributed to the NDSU College of Engineering staff and faculty every other Tuesday.

Read past issues of *College Happenings* here.

Deadline for submissions to *College Happenings* is 12:00 p.m. Fridays.

Contact kyle.bosch@ndsu.edu to submit items for *College Happenings*.

Follow the College of Engineering on social media.