

COLLEGE HAPPENINGS

January 9, 2024

FROM THE INTERIM DEAN

Welcome to 2024

Happy New Year! I hope you all had a chance to relax and recharge with family and friends over the winter break. Whether you stayed close to home or traveled afar, spending some time away from the office is important for our well-being. As we begin a new semester, I want to extend my appreciation to all of you for your commitment and dedication to providing the best possible educational experience for our students.

This semester, I am particularly excited about a new mentorship program that we are piloting, called *Industry Connections*. The goal of this program is to help improve retention among first- and second-year students by pairing them with an industry mentor in their field of interest. We know that effective mentorship from practitioners is an important factor that contributes to the success of our graduates once they enter the workforce. By introducing that mentorship experience earlier in their academic career, we aim to help students understand and appreciate the contributions they can make to society through their chosen profession.

During this pilot study, we will have approximately 25 pairs of industry mentors and student mentees representing all departments in our college. The program has been very well received among our industry partners, and they have responded enthusiastically by providing numerous mentors who are willing to volunteer their time to help support our students. These mentors will meet several times throughout the semester with their mentees, offering them academic advice, career guidance, and recommendations on personal and professional goals. We plan to expand the program in future years to include all students who may be interested in this unique mentorship opportunity.

Working together with our industry partners, we will achieve even greater success in meeting the workforce needs of our state and region. I appreciate your support in helping our students achieve their full potential...and I wish you all the best in 2024!

Alan R. Kallmeyer, Ph.D.

Interim Dean | College of Engineering

IN THE NEWS

[NDSU graduate school receives national recognition](#)

[NDSU sets record for annual research expenditures](#)

[Students reflect on NDSU experience](#)

[Fargo Monthly: College for Kids](#)

CONGRATULATIONS

Please let [College Happenings](#) know about honors, awards, new grants and other announcements so we can share them with other faculty and staff.

NEW HIRES

Lauren Viker – Academic and Student Services Coordinator in the Department of Civil, Construction and Environmental Engineering.

Anna Adkins – Academic and Administrative Assistant for the College of Engineering and the Department of Industrial and Management Engineering.

Grant Klevgaard – Academic Advisor for the Cybersecurity and Software Engineering Programs.

Armstrong Aboah – will start February 1 as the new Transportation Engineering faculty member in the Department of Civil, Construction and Environmental Engineering.

UPCOMING EVENTS

Thursday, January 11, **Spring 2024 NIH Grant Bootcamp Info Session.** Learn more about the upcoming NIH Grant Bootcamp that will run from January to May with the intention of supporting grant submissions with June and September deadlines. 11:30 a.m. – 1:00 p.m. Memorial Union Nueta Room.

Wednesday, January 17, **Post Tenure Review Committee Town Hall.** This meeting will provide information to all faculty and staff on the SBHE Ad Hoc Post Tenure Review Committee. The meeting will address the SBHE committee's charge, what NDSU's responses have been to date, and what the committee expects. 9:00 – 10:00 a.m. in the Memorial Union Prairie Rose room.

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.

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!

Leadership and Entrepreneurship Workshop

- Thursday, January 25
- 11:00 a.m. to 12:30 p.m.
- Location: Memorial Union – Prairie Rose Room

Topic: Leadership and entrepreneurship discussion with Zane Gernhart, Executive Director for the NDSU Research Foundation (NDSURF), and Cindy Graffeo, Innovation and Economic Development Director for NDSU Office and Creative Activity.

Register [>> here](#) by Friday, January 19

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>

SUMMER UNDERGRADUATE BIOMEDICAL RESEARCH PROGRAM

The NDSU Office of Research and Creative Activity is seeking faculty mentors and research projects for a summer undergraduate biomedical research program. The program’s participants will be undergraduate students attending colleges and universities in North Dakota. Funded by the North Dakota IDeA Network of Biomedical Research Excellence, the program’s goal is to expose the state’s undergraduate STEM major students to careers in the biomedical sciences.

The 10-week program will run from May 28, 2024 to August 2, 2024. Participating students are expected to conduct research independently for 40 hours per week, participate in weekly mentoring by faculty and project leaders, and attend workshops, trainings, and other activities organized by the RCA office. Through the funds received from the grant, the RCA office will cover the following costs for each undergraduate researcher:

- Summer positions will pay \$15/hour. It is expected that students will work 40 hours per week. Overtime is not allowed.
- Funds up to \$500 will be available to purchase consumable research materials and for the use of NDSU core facilities.

- Student on-campus housing will be provided for non-NDSU students who would need to relocate to Fargo for the program.

One-page project proposals should include:

- A project title and contact information for the faculty mentors. Collaborative faculty mentor teams are encouraged.
- An abstract describing the project and the expected outcomes from the undergraduate research experiences which will also be available to student applicants. Remember that interested applicants may not have past research experience so please keep technical descriptions at a level easy for undergraduate students to understand.
- A short description of the relation of the proposed project to biomedical research.

This summer undergraduate research program will fund one student per project. [Proposals Due: January 20, 2024 at 11:59 p.m.](#)

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 SUBMITTED PROPOSALS

- Harun Pirim (Principal Investigator), Ajay Kumar Jha (Co-PI). A-SYSRV: SYSTEMS BIOLOGY REVERSE VACCINOLOGY, AN INTEGRATED VACCINE PREDICTION TOOL FOR AQUACULTURE PATHOGENS. \$650,000 from the National Institute of Food & Agriculture. 7/1/2024 - 6/30/2027.
- Luke R Gibbon (Principal Investigator). Beeswax Drug Delivery Coating. \$53,200 from the ND Department of Agriculture. 1/1/2024 - 6/30/2025.
- Sulaymon Eshkabilov (Principal Investigator). Using machine learning algorithms for optimizing lettuce production, ensuring food safety, and mitigating environmental impact. \$1,000,000 from the Agricultural Marketing Service. 9/30/2024 - 9/29/2027.
- Zhikai Liang (Principal Investigator), Joao Paulo Cassol Flores (Co-PI). Collaborative Research: Improving the Transferability of Sorghum Heat Tolerance Across Growth Platforms using Temporally and Spatially Robust Genomic Grammar. \$1,050,193 from the National Science Foundation. 8/1/2024 - 7/31/2027.
- Sudarshan Kumar Srinivasan (Principal Investigator), Laura Elizabeth Thomas (Co-PI). CHARM: Cognitive High Assurance Representations for Mixed-reality. \$472,959 from the Office of the Secretary of Defense. 7/1/2024 - 6/30/2027.
- Mijia Yang (Principal Investigator), Yao Yu (Co-PI), Erin Hanora Gillam (Co-PI). South Dakota Blowing Snow Mitigation Strategies, Prioritization, and Implementation. \$125,001 from the SD Department of Transportation. 3/1/2024 - 8/31/2025.
- Achintya Nayan Bezbaruah (Principal Investigator), Mohiuddin Abdul Quadir (Co-PI). Understanding PFAS Release and Uptake at the Plant-Soil Interface to Develop Sustainable Agronomic Practices for Food Safety. \$1,599,469 from the Environmental Protection Agency. 8/1/2024 - 7/31/2028.
- Chau Le (Principal Investigator). Develop Methods to Reduce Crashes and Increase Driver Compliance in Work Zones. \$14,000 from the SD Department of Transportation. 3/15/2024 - 3/14/2025.
- Mijia Yang (Principal Investigator). Multiscale Modeling of Fiber Woven Composite through Fusion of NASMAT and Peridynamics. \$100,000 from the National Aeronautics and Space Administration. 3/1/2024 - 2/28/2025.
- Yan Zhang (Principal Investigator), Yechun Wang (Co-PI). Multiphase Fluid Transport in Collapsible Tubes under Altered Gravity (RFA-026). \$75,112 from the National Aeronautics and Space Administration. 6/1/2024 - 5/31/2025.

RECENT PUBLICATIONS

For 2024, 13 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:

- Dang, Khang, Kehinde Elelu, Tuyen Le, and Chau Le. 2023. "Dang et al. Augmented Hearing of Auditory Safety Cues for Construction Workers: A Systematic Literature Review (Vol 22, 9135, 2022)." *SENSORS* 23 (22): 9160. <https://doi.org/10.3390/s23229160>.
- Hayawi, Kadhim, Zahid Anwar, Asad W. Malik, and Zouheir Trabelsi. 2023. "Airborne Computing: A Toolkit for UAV-Assisted Federated Computing for Sustainable Smart Cities." *IEEE INTERNET OF THINGS JOURNAL* 10 (21): 18941–50. <https://doi.org/10.1109/JIOT.2023.3292308>.
- Karbasi, Masoud, Mehdi Jamei, Mumtaz Ali, Anurag Malik, Xuefeng Chu, Aitazaz Ahsan Farooque, and Zaher Mundher Yaseen. 2023. "Development of an Enhanced Bidirectional Recurrent Neural Network Combined with Time-Varying Filter-Based Empirical Mode Decomposition to Forecast Weekly Reference Evapotranspiration." *AGRICULTURAL WATER MANAGEMENT* 290 (December): 108604. <https://doi.org/10.1016/j.agwat.2023.108604>.
- Li, Zhaofan, Yang Wang, Guorong Ma, Yangchao Liao, Xiaodan Gu, and Wenjie Xia. 2023. "Probing Conformational Properties of Conjugated Polymers in Dilute Solutions under Variable Solvent Quality via Coarse-Grained Modeling." *JOURNAL OF POLYMER SCIENCE*, November. <https://doi.org/10.1002/pol.20230689>.

- Meena, Siyaram, Kapil Atmaram Chobhe, Kanchikeri Math Manjaiah, Siba Prasad Datta, Debasis Golui, Md Basit Raza, Mohammad Mahmudur Rahman, and A. Naveenkumar. 2023. “Synthesis, Characterization and Adsorptive Performances of Functionalized Clay Minerals and Red Mud for Aqueous Arsenic Removal.” *GROUNDWATER FOR SUSTAINABLE DEVELOPMENT* 23 (November): 101025. <https://doi.org/10.1016/j.gsd.2023.101025>.
- Nie, Wenjian, Jack F. Douglas, and Wenjie Xia. 2023. “Competing Effects of Molecular Additives and Cross-Link Density on the Segmental Dynamics and Mechanical Properties of Cross-Linked Polymers.” *ACS ENGINEERING AU* 3 (6): 512–26. <https://doi.org/10.1021/acsengineeringau.3c00043>.
- Ram, Billy Graham, Yu Zhang, Cristiano Costa, Mohammed Raju Ahmed, Thomas Peters, Amit Jhala, Kirk Howatt, and Xin Sun. 2023. “Palmer Amaranth Identification Using Hyperspectral Imaging and Machine Learning Technologies in Soybean Field.” *COMPUTERS AND ELECTRONICS IN AGRICULTURE* 215 (December): 108444. <https://doi.org/10.1016/j.compag.2023.108444>.
- Rathore, Avinash Chandra, Charan Singh, J. Jayaprakash, Anand Kumar Gupta, Vijay Kumar Doharey, Dinesh Jinger, Deepak Singh, et al. 2023. “Impact of Conservation Practices on Soil Quality and Ecosystem Services under Diverse Horticulture Land Use System.” *FRONTIERS IN FORESTS AND GLOBAL CHANGE* 6 (November): 1289325. <https://doi.org/10.3389/ffgc.2023.1289325>.
- Roth, Katherine, and Kambiz Farahmand. 2023. “A Study of Current Socio-Technical Design Practices in the Industry 4.0 Context among Small, Medium, and Large Manufacturers in Minnesota and North Dakota.” *SUSTAINABILITY* 15 (23): 16438. <https://doi.org/10.3390/su152316438>.
- Shang, Li, Zi Zhang, Fujian Tang, Qi Cao, Hong Pan, and Zhibin Lin. 2023. “CNN-LSTM Hybrid Model to Promote Signal Processing of Ultrasonic Guided Lamb Waves for Damage Detection in Metallic Pipelines.” *SENSORS* 23 (16): 7059. <https://doi.org/10.3390/s23167059>.
- Shang, Li, Zi Zhang, Fujian Tang, Qi Cao, Nita Yodo, Hong Pan, and Zhibin Lin. 2023. “Deep Learning Enriched Automation in Damage Detection for Sustainable Operation in Pipelines with Welding Defects under Varying Embedment Conditions.” *COMPUTATION* 11 (11): 218. <https://doi.org/10.3390/computation11110218>.
- Yang, Xinyi, Xingyu Wang, Joseph Podolsky, Ying Huang, and Pan Lu. 2023. “Development of Asphalt Pavement Temperature Prediction Models Utilising Multiple Regression and Artificial Neural Network Approaches: A Field Study in North America.” *INTERNATIONAL JOURNAL OF PAVEMENT ENGINEERING* 24 (2): 2279250. <https://doi.org/10.1080/10298436.2023.2279250>.
- Yasoda, Ratna Divya, Ying Huang, and Xiaoning Qi. 2023. “The Effect of Exposure Conditions on the Long-Term Performance Evaluation of Undamaged and Damaged Wire-Arc-Sprayed Zinc-Aluminum Alloy Coatings.” *Journal of Thermal Spray Technology*, December. <https://doi.org/10.1007/s11666-023-01694-z>.

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*.

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