NDSU | COLLEGE OF ENGINEERING

COLLEGE HAPPENINGS

March 21, 2023

FROM THE INTERIM DEAN

The Importance of Advising

As we kick off the advising campaign for the fall semester, I would like to remind everyone of the importance of this activity on the retention of our students. Numerous studies have shown that the advising process is an important component in the success of students. A holistic advising process, covering academic, career, and life decisions, assists students by not just providing guidance in navigating the curriculum, but also in making sound decisions that will affect their well-being on campus as well as their professional aspirations after graduation. This is particularly important among our most vulnerable student populations, including first-generation students and under-represented populations.

Next year, NDSU will begin implementation of a new, campus-wide, professional advising model targeted at first and second year students. Professional advisors will be hired to assist with academic advising of students in all colleges, including the College of Engineering. Having witnessed first-hand the effectiveness of a full-time professional advising model in the College of Business, as well as the outstanding guidance provided to general engineering students by Joel Hanson in our own college, I fully support this new model. These advisors will be able to devote considerably more time and resources to the academic advising of our students enrolled in the first two years of our programs, where attrition is greatest. I am confident that this investment will improve student success and retention through an enhanced focus on student well-being, which benefits all of us.

While we expect that the new advising model will be a great asset for our students, particularly in the area of academic course selections, I would also like to emphasize that this is just one component of the overall advising experience. Our faculty and staff will still play a crucial role in other aspects of advising, most notably in the professional and career guidance that we can provide through our own life experiences. Having advised hundreds of students during my career at NDSU, I truly value the relationships that I developed with many of them, and take pride in following their successes after graduation. The impact we have on our students is not always immediately clear, but often becomes evident through the choices they make throughout their careers.

Thanks to all of you for your ongoing dedication and commitment to the well-being of our students!

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

IN THE NEWS

[NDSU College of Engineering partners with Concordia College](#)

[NDSU and Concordia announce combined engineering degree program (Valley News Live)](#)

[Concordia, NDSU forge engineering program partnership (Fargo Forum)](#)

[Concordia and NDSU sign engineering partnership agreement (KVRR)](#)

[Battle of the Cents-es to benefit Moorhead student](#)

['The future is primed for substantial growth'](#)

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

Thursday, March 23, **Spring Faculty Council Meeting**. 12:00 to 1:00 p.m. in the Memorial Union Sahnish Room. Lunch will be served. At this meeting, we will be electing faculty to serve in several positions for the coming academic year.

Thursday, March 30, **College of Engineering Staff Luncheon**. 11:00 a.m. – 1:00 p.m. in the Memoria Union Sahnish Room. Lunch will be served.

Thursday, March 30, **Strategies for Implementing Child Care and Family Support in Campus Communities**. This event is a continuation of the January 26 discussion on the equity issues faced by campus communities due to inadequate child care and caregiver support. 12:00 - 1:30 p.m. [Register Here](#).

Friday, March 31, **Faculty Luncheon**. You're invited to join this panel discussion to learn more about the innovative teaching techniques that the panelists have used in enhancing the education experience for students at NDSU. 11:30 a.m. – 1:00 p.m. in the Prairie Rose room in the Memorial Union. Deadline to [REGISTER](#) is **March 17.**

Tuesday, April 18, **Student Research Day**. NDSU Student Research Day is a one-day event dedicated to providing graduate and undergraduate students an opportunity to present their research and creative works. [Learn more and register](#). Registration closes March 23 at noon.

Thursday, May 4, **College of Engineering Senior Design Expo**. The Spring Senior Design Expo will showcase capstone projects from all departments in the College of Engineering and give you the chance to interact with our amazing students and learn more about their work. 12:00 – 3:00 p.m. in the Oceti Sakowin Ballroom.

Friday, May 12, **Spring Ring and Pin Ceremony**. This ceremony is a blending of two significant and celebratory events, the Order of the Engineer and the Pledge of the Computing Professional. The ceremony begins at 3:00 p.m. in AG Hill Room 122.

Saturday, May 13 **NDSU Spring Commencement**. You are encouraged to participate in the 2023 Spring Commencement ceremonies. Graduates of the College of Engineering will be honored in the Fargodome at 10:00 a.m.

COLLEGE OF ENGINEERING AWARDS

Each year, the College of Engineering recognizes outstanding teaching activities of faculty and graduate students by awarding the Teacher of the Year awards; the unique research accomplishments of faculty and graduate students by conferring the Researcher of the Year awards; and the dedication and contributions of our staff members through the presentation of the Outstanding Staff Awards.

Nominations for each of these awards are now being accepted for 2023. The eligibility requirements and nomination documents for each award can be found at the following link: https://www.ndsu.edu/coe/faculty_staff/college_awards/.

INSPIRING COLLEAGUE AWARD

The Office of Teaching and Learning is seeking nominations for its annual Inspiring Colleague Award. To submit a nomination, explain why the individual deserves the award in 2,000 characters or less. Nominations can be made by any member of the NDSU community. The award recipient will receive a $100 NDSU Bookstore gift card.

Winners will be announced at the Teaching and Learning Conference to be held Tuesday, May 23, 2023.

Nominate an Inspiring Colleague >>

NDSU NSF WORKSHOPS – MARCH 30, 2023

NSF CAREER Proposals
8:30am-1:00pm / Memorial Union Hidatsa Room

The *NSF Faculty Early Career Development (CAREER) Program (NSF 22-586)* is a prestigious award program in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of the department or organization. The intention is to provide a firm foundation for a lifetime of leadership in integrating research and education.

This highly interactive workshop will provide strategies for interacting with program officers, analysis of the solicitation, anatomy of the proposal, best practices for developing competitive proposals, and time for Q&A. This session will conclude with a panel of CAREER awardees at NDSU who will share their experience and tips for success. Register >>

NSF EPSCoR Research Infrastructure Improvement Program: Track 2 & Track 4
1:30-3:30pm / Memorial Union Hidatsa Room

The *NSF EPSCoR Track 2: Focused EPSCoR Collaborations Program (NSF 22-633)* supports interjurisdictional teams of EPSCoR investigators to perform research in emerging industries, with the goal of promoting economic growth in their jurisdictions. The topic for FY2024 is "advancing climate change research and resilience capacity to expand opportunities for disproportionately affected communities."

This is a limited submission program; the next opportunity for submission to the Track 2 program will be for the December 2023 letter of intent deadline.

The *NSF EPSCoR Track 4: EPSCoR Research Fellows Program (NSF 23-535)* supports early-career investigators located in EPSCoR jurisdictions (like ND) to go on extended collaborative visits to private, government, or academic research centers to enhance Fellows' research trajectories and improve research capacity of their home institutions and jurisdictions.

This is a limited submission program; the next opportunity for submission to the Track 4 program will be for the April 2024 deadline. NDSU is not eligible for the NASA track.

This session will provide analysis of the programs and strategies for meeting program requirements and developing competitive proposals. Topics will include identifying potential collaborators in EPSCoR jurisdictions, hallmarks of collaborations required by the program, characteristics of a strong mentoring relationship, and strategies for constructing the research plan. Register >>

FUNDING OPPORTUNITIES

ND EPSCoR: Emerging Seed Topics

ND EPSCoR is soliciting Emerging Seed proposals in the areas that spin-off of or are emerging research area that can expand the reach and capacity of the NSF EPSCoR funded award entitled New Discoveries in the Advanced Interface of Computation, Engineering, and Science (ND-ACES) (see below). More information about eligibility and responding to this solicitation can be found in the attached pdf or in the Funding Opportunities – Researchers section of the ND EPSCoR website.

Emerging Seed Topics:

- Imaging Techniques for Cell Growth in Testbeds
- Multimedia Art Modules for Explaining CCBSE Science
- Inclusion of Additional Cell Types and Fluid Flow Conditions in Testbeds
- Innovation Pilot Funding and Translational Seed Research that Fit the CCBSE Mission
- Self-assembly Technologies for Tissue Engineering
- New Biomaterials in Tissue Engineering and Advanced Manufacturing of Biomaterials
- Novel Biobased Specialty Crop Extracts for Anticancer Therapy Applications

Deadline: April 3, 2023

DARPA: Multi-objective Engineering and Testing of Alloy Structures (METALS)

The Defense Sciences Office (DSO) at the Defense Advanced Research Projects Agency (DARPA) is soliciting innovative research proposals in the area of material testing and design optimization.

METALS aims to enable continuum material structures by leveraging recent advances in material testing and materials informatics. Novel full-field characterization methods now exist that can track test specimen behavior (e.g., deformation) with precise temporospatial detail. Applying these methods to non-conventional test specimens will enable the simultaneous extraction of multiple properties aided by inverse analysis techniques. In this approach, material properties are learned based on observed specimen response rather than attempting to model response based on traditional curated material property curves. METALS aims to demonstrate rapid acquisition of design-relevant properties through the combination of novel specimen designs, state-of-the-art full-field characterization techniques, and inverse analysis.

Deadline: June 9, 2023

SF: Expanding AI Innovation through Capacity Building and Partnerships (ExpandAI) – Limited Submission Program

The National Science Foundation and its partners support the continued growth of a broad and diverse interdisciplinary research community for the advancement of AI and AI-powered innovation, providing a unique opportunity to broadly promote the NSF vision and core values, especially inclusion and collaboration. The Expanding AI Innovation through Capacity Building and Partnerships (ExpandAI) program [NSF 23-506] aims to significantly broaden participation in AI research, education, and workforce development through capacity development projects and through partnerships within the National AI Research Institutes ecosystem.

Notify RCA by April 5, 2023, 5pm, if you are interested in submitting to this program for the application window ending June 26, 2023.

NSF DCL: Bioinspired Design Collaborations to Accelerate the Discovery-Translation Process (BioDesign)

This Dear Colleague Letter (DCL) [NSF 23-055] seeks to leverage current National Science Foundation (NSF) programs to:

- encourage early-stage, transdisciplinary collaboration of two or more investigators doing research in biological and engineering sciences with the potential for bioinspired design applications; and
- accelerate the translation of research findings into projects with potential societal and economic impacts that could be ready for commercialization.

Deadlines vary by target program.

RECENTLY FUNDED GRANTS

- Jeremy A Straub (PI). Support for Open Courseware Creation for Ethical Hacking. $5,000 from the ND University System Office. 2/14/2023 - 5/1/2023.
- Paulo Cassol Flores (CPI). Understanding How Fusarium Affects Soybean in North Dakota and Development of Disease Management Strategies. $66,233 from the ND Soybean Council. 7/1/2023 - 6/30/2024.

RECENTLY SUBMITTED PROPOSALS

- Sulaymon Eshkabilov (PI). Mastering multiscale computational and modeling tools with AI applications at MIT. $5,000 from the NDSU Foundation. 5/15/2023 - 5/14/2024.
- Jeremy A Straub (PI). Northern Great Plains VICEROY. $838,950 from the Griffiss Institute. 7/1/2023 - 6/30/2026.
- Jiale Xu (PI). Low-Cost and Efficient Control of Onsite Pesticide Contamination by Far-UVC Light to Protect Farmer Health and Ecosystems. $136,567 from the Natural Resources Conservation Service. 9/1/2023 - 8/31/2024.
- Mijia Yang (PI). Post-disaster structural condition assessment through digital twins. $5,000 from the NDSU Foundation. 6/1/2023 - 12/31/2024.
- Mijia Yang (PI). Development of low-cost RFID sensors to track the survivability of road signs. $1,000 from the NDSU Foundation. 6/1/2023 - 12/31/2024.
- Abdulaziz Ali H Banawi (PI), Yao Yu (CPI). Building energy audit and analysis of Academic Buildings at North Dakota State University. $25,000 from the ND Department of Commerce. 4/1/2023 - 3/31/2024.
- Chau Le (PI), Grant Lebahn (CPI). Holistic Analytics of Equity for Enhancing Worker Mental Health and Preventing Suicides: A Focus in the Construction Industry. $74,511 from the National Science Foundation. 1/1/2024 - 8/31/2024.
- Yao Yu (PI), Zhili Gao (CPI). Needs Assessment Study of Low-Income North Dakota Individuals and Families. $9,942 from the Community Action Partnership of ND. 3/20/2023 - 7/28/2023.
- Grant Lebahn (PI). NDSU Foundation - Board of Trustees Endowment Grant Program. $944 from the NDSU Foundation. 8/21/2023 - 12/13/2024.
- Grant Lebahn (PI). NDSU Foundation - Centennial Endowment Grant Program. $4,956 from the NDSU Foundation. 8/21/2023 - 12/13/2024.
- Shuvashis Dey (PI). Radio Frequency Identification (RFID) Based Soil Macro-Nutrient Sensing System for Smart Farming. $16,500 from the NDSU Foundation. 6/1/2023 - 11/30/2024.
- Shuvashis Dey (PI). Microwave Rectenna and Cellulose Nano Fiber (CNF) Thin Film Based Wireless Drug Delivery System for Therapeutic Treatment. $19,000 from the NDSU Foundation. 6/1/2023 - 11/30/2024.
- Jiale Xu (PI). Innovative Pathogen Disinfection Technology by Coupling Far UVC and Peracetic Acid. $5,000 from the NDSU Foundation. 6/1/2023 - 5/31/2024.
- Xiaoyu Feng (PI). Mitigating noxious emission from livestock housing with low-cost biochar (Gordon A. Larson Foundation). $4,358 from the NDSU Foundation. 7/1/2023 - 6/30/2024.

- Xiaoyu Feng (PI). Mitigating noxious emission from livestock housing with low-cost biochar (White Memorial Endowment). $4,358 from the NDSU Foundation. 7/1/2023 - 6/30/2024.
- Xiaoyu Feng (PI). Preliminary study of anaerobic digestion of defatted soybean meal for biogas and biofertilizer productions (Gordon A. Larson Foundation). $3,836 from the NDSU Foundation. 7/1/2023 - 6/30/2024.
- Xiaoyu Feng (PI). Preliminary study of anaerobic digestion of defatted soybean meal for biogas and biofertilizer productions (White Memorial Endowment). $3,836 from the NDSU Foundation. 7/1/2023 - 6/30/2024.
- Xiaoyu Feng (PI). Energy efficiency and environmental impacts of controlled environment high tunnel greenhouses with a remote-controlled drip irrigation system: A life cycle assessment (Gordon A. Larson Foundation). $4,224 from the NDSU Foundation. 7/1/2023 - 6/30/2024.
- Xiaoyu Feng (PI). Energy efficiency and environmental impacts of controlled environment high tunnel greenhouses with a remote-controlled drip irrigation system: A life cycle assessment (White Memorial Endowment). $4,224 from the NDSU Foundation. 7/1/2023 - 6/30/2024.

RECENT PUBLICATIONS

For 2023, 46 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:

- Alqarni, Abdulsalam Ahmed, Om Prakash Yadav, and Ajay Pal Singh Rathore. 2022. "Application of Isotonic Regression in Predicting Corrosion Depth of the Oil Refinery Pipelines." In *2022 68th Annual Reliability and Maintainability Symposium (Rams 2022)*. New York: Ieee. https://doi.org/10.1109/RAMS51457.2022.9893952.
- Feng, Xiaoyu, Jerry H. Cherney, Debbie J. R. Cherney, and Matthew F. Digman. 2023. "Practical Considerations for Using the NeoSpectra-Scanner Handheld Near-Infrared Reflectance Spectrometer to Predict the Nutritive Value of Undried Ensiled Forage." *Sensors* 23 (4): 1750. https://doi.org/10.3390/s23041750.
- Hassan, Fahad Ul, Tuyen Le, and Chau Le. 2023. "Automated Approach for Digitalizing Scope of Work Requirements to Support Contract Management." *Journal of Construction Engineering and Management* 149 (4): 04023005. https://doi.org/10.1061/JCEMD4.COENG-12528.
- Huynh, Phat, Leah Irish, Om Prakash Yadav, Arveity Setty, and Trung Tim Q. Le. 2022. "Causal Inference in Longitudinal Studies Using Causal Bayesian Network with Latent Variables." In *2022 68th Annual Reliability and Maintainability Symposium (Rams 2022)*. New York: Ieee. https://doi.org/10.1109/RAMS51457.2022.9893992.
- Mandal, Jajati, Vinay Jain, Sudip Sengupta, Md. Aminur Rahman, Kallol Bhattacharyya, Mohammad Mahmudur Rahman, Debasis Golui, Michael D. Wood, and Debapriya Mondal. 2023. "Determination of Bioavailable Arsenic Threshold and Validation of Modeled Permissible Total Arsenic in Paddy Soil Using Machine Learning." *Journal of Environmental Quality* 52 (2): 315–27. https://doi.org/10.1002/jeq2.20452.
- Oli-Uz-Zaman, Md, Saleh Ahmad Khan, William Oswald, Zhiheng Liao, and Jinhui Wang. 2022. "Stuck-at-Fault Immunity Enhancement of Memristor-Based Edge AI Systems." *IEEE Journal on Emerging and Selected Topics in Circuits and Systems* 12 (4): 922–33. https://doi.org/10.1109/JETCAS.2022.3207687.
- Pirim, Harun, Morteza Nagahi, Oumaima Larif, Mohammad Nagahisarchoghaei, and Raed Jaradat. 2023. "Integrated Twitter Analysis to Distinguish Systems Thinkers at Various Levels: A Case Study of COVID-19." *Applied Network Science* 8 (1): 1–26. https://doi.org/10.1007/s41109-022-00520-9.
- Saleh, Zead, and Harun Pirim. 2023. "Modified Modularity Density Maximization and Density Ratio Heuristic." *Computers & Operations Research* 150 (February): 106072. https://doi.org/10.1016/j.cor.2022.106072.
- Samal, Saubhagya Kumar, Siba Prasad Datta, Brahma Swaroop Dwivedi, Mahesh Chand Meena, Mahaveer Nogiya, Mahipal Choudhary, Debasis Golui, and Mohammed Basit Raza. n.d. "Phytoextraction of Nickel, Lead, and Chromium from Contaminated Soil Using Sunflower, Marigold, and Spinach: Comparison of Efficiency and Fractionation Study." *Environmental Science and Pollution Research*. Accessed March 20, 2023. https://doi.org/10.1007/s11356-023-25806-y.
- Subhashree, Srinivasagan N., C. Igathinathane, Adnan Akyuz, Md. Borhan, John Hendrickson, David Archer, Mark Liebig, et al. 2023. "Tools for Predicting Forage Growth in Rangelands and Economic Analyses—A Systematic Review." *Agriculture* 13 (2): 455. https://doi.org/10.3390/agriculture13020455.

- Wang, Ke, Raj Shankar Hazra, Qian Ma, Md Rakib Hasan Khan, Ashique Al Hoque, Long Jiang, Mohiuddin Quadir, Yuanming Zhang, Shudong Wang, and Guangting Han. n.d. "Robust Biocompatible Bacterial Cellulose/Silk Nonwoven Fabric/Silk Sericin Sandwich Membrane with Strong UV-Blocking and Antioxidant Properties." *Cellulose*. Accessed March 20, 2023. https://doi.org/10.1007/s10570-023-05102-1.

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.