NDSU | COLLEGE OF ENGINEERING

COLLEGE HAPPENINGS

October 4, 2022

IN THE NEWS

NDSU team wins National Cyber Summit Cyber Cup competition

NDSU computer science student awarded prestigious SMART scholarship

Challey Spotlight: Zia Muhammad

North Dakota educators, researchers work to better detect diabetes in early stages

Artificial intelligence could be the key to detecting diabetes and cancer early

NDSU leads Great Plains Innovation Hub

Williston duo to take part in Artemis I launch

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

Friday, October 7, **Including U: Indigenous Perspectives**. All sessions are from 12:00 to 1:00 p.m. and will again be offered via Zoom to allow greater participation. Jaclynn Davis Wallette, Carissa Brownotter and Spring Grey Bear will serve as panelists.

Saturday, October 8, **5th Annual North Dakota Biomedical Engineering Symposium**. The event promotes the joint Biomedical Engineering graduate programs and strengthen the collaborations among UND/NDSU faculty and industries. 8:00 a.m. – 5:00 p.m. at the UND Center for Innovation. Register here.

Thursday, October 13, **College of Engineering Scholarship and Awards Reception**. 3:00 p.m.in the NDSU Memorial Union. There is no charge to attend, but please RSVP here by October 6.

Wednesday, October 26, **Academic Leaders Series: Working with Distressed Students**. This workshop will identify some of the common concerns our students face and the key resources that are in place to provide assistance, support, and advocacy. 3:00 – 4:00 p.m. on Zoom.

ACADEMIC STANDING UPDATE

Due to the administration of financial aid, "Academic Warning" will no longer be one of the Academic Standing options. Students who were previously placed on "Academic Warning" will be identified as "Good Standing". If you or your department previously used "Academic Warning" as at trigger for additional communication to your students, you will need to use a GPA search to identify students who might have performed poorly in a specific semester.

Academic Probation will now show as an Alert. Academic Suspension will stay the same. For more information go to: https://www.ndsu.edu/onestop/academic-standing

RESPONDING TO SEXUAL ASSAULT DISCLOSURES TRAINING

The President's Council on Campus Well-being (PCCW) Sexual Assault Response Education work group invites you to a **Responding to Sexual Assault Disclosures for Mandatory Reporters workshop on Wednesday October 12th at noon on zoom.**

All NDSU employees (with the exception of Counseling Center and Student Health Service staff, and the Ombudsperson) are considered mandatory reporters for incidents of sexual misconduct, discrimination, and harassment. This supplementary workshop will give step by step information about how to talk with an individual who has experienced sexual violence, how to submit a mandatory report form following a disclosure, and the institutional response following a report.

What: Responding to Sexual Assault Disclosures for Mandatory Reporters
When: Wednesday October 12th at noon
Where: https://ndsu.zoom.us/j/91294182319?pwd=cEVBak5CeWtuNENKTVJzclF5Zmo4UT09
Who: All NDSU employees
Questions? Email megan.talcott@ndsu.edu

If you would like to host a Sexual Assault Response Education training for your organization or department please fill out the request for HERE.

BECOME A REVIEWER FOR GRANT PROPOSALS

Serving as a grant reviewer for a funding agency is one of the best ways to improve your own grantsmanship. It allows you to become familiar with the grant process, the funding agency, and the specific funding program for which you are reviewing. Additionally, having the opportunity to read and evaluate proposals can provide insight on what makes a proposal successful as well as what things to avoid.

You do not need to wait for an invitation to be a reviewer - you can volunteer to serve on a panel. Most agencies are continually looking for additional reviewers. You can let your program officer know that you are interested in being on a review panel, or, for some agencies, you can volunteer through a web portal or published process. Learn more:

- National Science Foundation
- National Institutes of Health
- National Endowment for the Humanities

NOVELUTION EXPENDITURE CHARTS

Expenditure Charts are now available in the Grants and Contracts Module of Novelution. Users are able to search all active NDSU grant and contract awards and view high level budget and expenditure data at the overall award level as well as sub-project level. Expenditure Charts are user friendly and are a great tool for faculty and staff to quickly see budget and spending levels on Grants and Contracts. The Expenditure Charts page contains the following information:

- **Donut Charts:** displaying total direct and indirect costs budgeted as well as total actuals spent to date
- **Line Graphs:** displaying monthly expenditure totals along with an ideal spending line
- **Bar charts:** that allow users to view budgeted and actuals spent to date by high level budget categories (personnel, operating, equipment, waivers/scholarships/fellowships, F&A) as well as the ability to view budgeted and actual spent by sub-projects, including subawards

Expenditure Charts can be accessed by clicking on "search charts" from the drop-down menu and then using filters on the search page to narrow results. Once you have filtered to narrow the results, select the blue chart icon on the far right of the Search Results display box. This feature is also accessible in all active award records listed in a user's "search projects" list. When in a record, click on the "View Charts" icon in the upper right corner of the record to open the "search charts" page.

Additional guidance on using the Expenditure Charts can be found on the RCA Novelution webpage. Questions related to the Expenditure Charts can be directed to Amy Scott at (701) 231-8976 or send an email to ndsu.research@ndsu.edu

FUNDING OPPORTUNITIES

DoD: Corrosion and Coatings

The Naval Surface Warfare Center Carderock Division is interested in receiving proposals [NSWCCD-22-0001] for the following Basic Research Opportunity Areas:

1. Advanced Materials
2. Modeling and Analytics
3. Training and Product Support

This opportunity is open through September 13, 2023

NSF: Entrepreneurial Fellowships

The U.S. National Science Foundation announced a new $20 million investment in Entrepreneurial Fellowships through a multi-year cooperative agreement with Activate.org. The Activate Fellows supported by NSF will be scientists and engineers from a variety of backgrounds and regions across the U.S. who will translate research breakthroughs to new products and services with broad societal benefits.

The initiative includes three possible pathways for scientists and engineers to participate:

- **Activate Anywhere** — A connected, yet not co-located, community of fellows that allows for any qualified scientist anywhere in the country to benefit from Activate fellowship support and leverage the concentrated resources of traditional innovation centers where Activate has in-residence offerings.
- **A New Activate In-residence Community** — A new in-person location that expands physical communities beyond Activate's existing locations ensuring that a regional hub exists for any fellow across the country who wants to be in-residence, and to strengthen the national base of resources that any fellow across the network can leverage.
- **Pre-doctoral Translational Research Experience** — A new mechanism aimed at expanding opportunities for diverse talent and overcoming racial imbalance in the science innovation ecosystem by supporting pre-doctoral scientists and engineers and exposing them to nascent science-based startups under the mentorship of Activate's network.

To learn more about Entrepreneurial Fellowships including how to apply, visit https://www.activate.org/apply.

RECENTLY FUNDED GRANTS

- Igathinathane Cannayen (PI). Developing Remote Sensing and Image Processing Tools for North Dakota Agricultural and Rangeland Applications. $118,994 from the Agricultural Research Service. 9/1/2022 - 8/31/2027.

RECENTLY SUBMITTED PROPOSALS

- Dali Sun (PI), Ivan T Lima, Jr. (CPI). pED, novel portable elliptical dichroism device for noninvasive detection of pancreatic cancer. $651,827 from the National Institutes of Health. 7/1/2023 - 6/30/2026.
- Trung Bao Le (PI), Surya Sarat Chandra Congress (CPI). Planning of floodplain culverts using 3D hydrodynamic simulations with drone-based inputs. $186,694 from the MN Department of Transportation. 7/1/2023 - 7/1/2025.
- Sumitha George (PI). CRII: SHF: FET: Ferroelectric FET based flexible circuits and system design. $174,999 from the National Science Foundation. 8/1/2023 - 7/31/2025.
- Umamaheswara Rao Tida (PI), Shuvashis Dey (CPI). IRES: Track I: International Research Experience on AI for RFID Sensing System with Artificial Intelligence. $300,000 from the National Science Foundation. 4/1/2023 - 3/31/2025.
- Chad A Ulven (PI), Jessica Lynne Lattimer Vold (CPI). Efficient and Direct Conversion of Lignin into Sustainable Building Materials. $2,000,000 from the National Science Foundation. 5/1/2023 - 4/30/2027.
- Trung Bao Le (PI), Zhibin Lin (CPI), Yan Zhang (CPI). Determining Ice Loading on Piers for Minnesota's Bridges. $210,598 from the MN Department of Transportation. 7/1/2023 - 6/30/2025.
- Long Jiang (PI), Zhibin Lin (CPI), Mijia Yang (CPI). Self-Healing, Easily Removable Pavement Marking Materials with Applications to Both Permanent and Temporary Markings. $151,498 from the MN Department of Transportation. 7/1/2023 - 6/30/2025.
- Zhibin Lin (PI). Deck Reinforcement Detailing and Concrete Mix Additives to Reduce Bridge Deck Cracking. $193,122 from the MN Department of Transportation. 7/1/2023 - 6/30/2025.
- Clairmont Clementson (PI). Extech Big Digit Hygro-Thermometer and Dickey John Handheld Grain Moisture Tester. $758 from the ND Grain Dealers Educational Foundation. 10/1/2022 - 9/30/2023.
- Xinhua Jia (PI), Harlene Hatterman-Valenti (CPI). Improving high tunnel vegetable productivity using an automated remotely controlled irrigation system. $1,119,612 from the Natural Resources Conservation Service. 4/1/2023 - 3/31/2028
- Lu Liu (PI). Multilayer Epigenetic, Transcriptional and Post-transcriptional Architecture in Cancer Progression and Endocrine Resistance. $568,506 from the National Institutes of Health. 7/1/2023 - 6/30/2028.
- Yan Zhang (PI), Yechun Wang (CPI). A Multiscale Framework of Fluid Physics Research for Vein Thrombosis and Its Countermeasures in Microgravity. $533,713 from the National Aeronautics and Space Administration. 7/1/2023 - 6/30/2025.
- Shuvashis Dey (PI), Benjamin Davis Braaten (CPI). Towards a Low-cost, Pervasive Wireless Soil Salinity and Nutrient (N-P-K) Sensing System for Precision Agriculture. $749,999 from the National Aeronautics and Space Administration. 2/1/2023 - 1/31/2026.
- Juan Li (PI). Developing an AI-based Virtual Assistant to Provide Tailored Information for Caregivers of Persons with Alzheimer's Disease and Related Dementias. $951,020 from the National Institutes of Health. 7/1/2023 - 6/30/2028.
- Omid Beik (PI). NSF Engines: Type 1: Regional energy resilience for economic development in five northern frontier EPSCoR states. $240,000 from the National Science Foundation. 5/1/2023 - 4/30/2025.

RECENT PUBLICATIONS

For 2022, 105 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:

- Congress, Surya Sarat Chandra, Anand J. Puppala, Clayton Treybig, Charles Gurganus, and Jim Halley. n.d. "Application of Unmanned Aerial Vehicles for Monitoring Airport Asset Surfaces." *Transportation Research Record*. Accessed September 30, 2022. https://doi.org/10.1177/03611981221115729.
- Feng, Xuhong, Pengle Cheng, Feng Chen, and Ying Huang. 2022. "Full-Scale Fire Smoke Root Detection Based on Connected Particles." *Sensors* 22 (18): 6748. https://doi.org/10.3390/s22186748.
- Golwala, Harmita, Biraj Saha, Xueyao Zhang, Stephanie C. Bolyard, Zhen He, John T. Novak, Yang Deng, Brian Brazil, Frank J. DeOrio, and Syeed Md Iskander. 2022. "Advancement and Challenges in Municipal Landfill Leachate Treatment-The Path Forward!" *ACS ES&T Water* 2 (8): 1289–1300. https://doi.org/10.1021/acsestwater.2c00216.
- Guo, Zhilei, Guohua Jing, Sara A. Tolba, Chung-shin Yuan, Yu-Hua Li, Xiaowei Zhang, Zhiwei Huang, et al. 2023. "Design and Construction of an O-Au-O Coordination Environment in Au Single Atom-Doped Ti4+ Defected TiO2 for an Enhanced Oxidative Ability of Lattice Oxygen for Hg0 Oxidation." *Chemical Engineering Journal* 451 (January): 138895. https://doi.org/10.1016/j.cej.2022.138895.
- Katti, Kalpana S., Haneesh Jasuja, Sharad Jaswandkar, Sibanwita Mohanty, and Dinesh R. Katti. n.d. "Nanoclays in Medicine: A New Frontier of an Ancient Medical Practice." *Materials Advances*. Accessed September 30, 2022. https://doi.org/10.1039/d2ma00528j.
- Koyuncu, Berkay, and Trung Bao Le. 2022. "On the Impacts of Ice Cover on Flow Profiles in a Bend." *Water Resources Research* 58 (9). https://doi.org/10.1029/2021WR031742.
- Ponugoti, Kushal K., Sudarshan K. Srinivasan, Scott C. Smith, and Nimish Mathure. n.d. "Illegal Trojan Design and Detection in Asynchronous NULL Convention Logic and Sleep Convention Logic Circuits." *IET Computers and Digital Techniques*. Accessed September 30, 2022. https://doi.org/10.1049/cdt2.12047.
- Thapa, Keshab B., Kalpana S. Katti, and Dinesh R. Katti. 2022. "Evolution of Nanomechanical and Macroscale Mechanical Responses of Expansive Clay during Swelling." *International Journal of Geomechanics* 22 (11): 04022191. https://doi.org/10.1061/(ASCE)GM.1943-5622.0002563.
- Ullah, Irfan, Benjamin D. Braaten, Adnan Iftikhar, Symeon Nikolaou, and Dimitris E. Anagnostou. 2022. "Beamforming with 1 x N Conformal Arrays." *Sensors* 22 (17): 6616. https://doi.org/10.3390/s22176616.
- Wang, Yilin, Dongxu Yin, Liming Lou, Xinying Li, Pengle Cheng, and Ying Huang. 2022. "Luotuo Mountain Waste Dump Cover Interpretation Combining Deep Learning and VDVI Based on Data from an Unmanned Aerial Vehicle (UAV)." *Remote Sensing* 14 (16): 4043. https://doi.org/10.3390/rs14164043.
- Yu, Yao, Ahmed C. Megri, Rui Miao, and Xiaoou Hu. n.d. "Calibrated Dynamic Zonal Model DOMA (+) Using the SCE-UA Method - Application to Atrium Temperature Distribution Prediction." *Science and Technology for the Built Environment*. Accessed September 30, 2022. https://doi.org/10.1080/23744731.2022.2118498.
- Yuan, Hui, Huanhai Xin, Di Wu, Zhiyi Li, Xiaohui Qin, Yuhan Zhou, and Linbin Huang. 2022. "Assessing Maximal Capacity of Grid-Following Converters With Grid Strength Constraints." *IEEE Transactions on Sustainable Energy* 13 (4): 2119–32. https://doi.org/10.1109/TSTE.2022.3183009.
- Zheng, Xiangrui, Yafang Guo, Jack F. Douglas, and Wenjie Xia. 2022. "Understanding the Role of Cross-Link Density in the Segmental Dynamics and Elastic Properties of Cross-Linked Thermosets." *Journal of Chemical Physics* 157 (6): 064901. https://doi.org/10.1063/5.0099322.
- Zholobko, Oksana, John Hurley, Xiang-Fa Wu, Ted Aulich, and Jivan Thakare. 2022. "Intermediate-Temperature Proton Exchange Membranes Based on Cerium Ultraphosphate Composited with Polybenzimidazole." *Journal of the Electrochemical Society* 169 (9): 094505. https://doi.org/10.1149/1945-7111/ac90f0.

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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