NDSU | COLLEGE OF ENGINEERING

COLLEGE HAPPENINGS

September 19, 2023

FROM THE INTERIM DEAN

Building Update: Designs, Donations and Drawings

Thanks to the input from many faculty, staff, students, advisory board members, and industry partners, the initial conceptual design of the new Engineering and Computational Sciences facility is nearing completion. The department chairs and other faculty and staff representatives have worked diligently to identify the top needs within each department, prioritize spaces, and seek compromise in order to ensure that the critical needs are met across the college. A guiding principle in the design of the facility has been to promote interdisciplinary collaboration, and I have been excited to see this philosophy implemented in a meaningful way as we have worked through the initial design phase of the building.

The majority of the new facility will be devoted to student learning and support spaces. A multi-use "Collaborative Design Studio" will provide space for our senior capstone groups, student competition teams, and other student design groups to gather, brainstorm, fabricate, and assemble their designs. This space will house fabrication equipment, 3-D printing facilities, welding and painting areas, electronic testing stations, and other resources that will make it one of the most impressive makerspaces in our region. A "Student Commons" area will provide additional spaces and huddle rooms for students to congregate, study, collaborate, and relax in between classes. This area will also be adjacent to our new Advising Center, tutoring rooms, and industry engagement spaces. And there will be numerous state-of-the-art teaching labs that will give us unparalleled hands-on abilities for teaching a diverse range of subjects such as mechatronics, automation, microelectronics, biomanufacturing, precision agriculture, human factors, instrumentation, materials science, energy systems, structural testing, environmental studies, AI, machine learning, and cybersecurity, among others. Finally, by moving our teaching functions into the new facility, we will free up additional space in our existing buildings to renovate and expand our research laboratories, which are also critical to support our full mission of teaching, research, and service.

We are also making good progress on the fundraising for the new building, having received private commitments amounting to over 25% of our final goal. We have received particularly good support from our industry partners, as they recognize the value this facility will bring in attracting and educating future engineers, computer scientists and construction managers. Our alumni are also stepping up to support the facility, exhibiting the pride they possess in being a part of this once-in-a-generation opportunity. The development team assembled by the Foundation has been outstanding to work with, and deserve our gratitude for their expertise and persistence in navigating this challenging fundraising goal.

The architectural team is putting the finishing touches on the initial floor plans and building renderings. Once completed, we will make those available for review and feedback. We would appreciate hearing your thoughts, suggestions, and ideas for improvement. It is imperative that we gather feedback on the design from all of our constituents, in order to ensure that the building will meet the needs of the college into the future. Thank you for your participation in this important process!

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

IN THE NEWS

Engineering students conduct summer cybersecurity research

NDSU cybersecurity institute awarded $1.5 million

NDSU to hold cybersecurity conference

AI and The Humanities seminar scheduled

Coatings scientist to lead Center for Bioplastics and Biocomposites

CONGRATULATIONS

2023 College Award Winners

The 2023 College of Engineering award winners have been announced.

Teaching

- Excellence in Teaching Award – Ying Huang
- Early Career Teaching Award – Ewumbua Monono
- Graduate Teaching Assistant of the Year – Ismat Ara

Research

- Excellence in Research Award – Jordi Estevadeordal
- Early Career Research Award – Rex Sun
- Graduate Research Assistant of the Year – Yangchao Liao

Staff

- Outstanding Staff Award Paraprofessional – Jacalyn Benson
- Outstanding Staff Award Professional – Kyle Bosch

The winners will be recognized at the Scholarship and Awards Reception on Thursday, September 28.

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, September 20, **Fall Career Expo**. This is an all-industry, all-major career fair that provides an excellent opportunity for students to connect with employers to discuss current and/or future career-related employment or internships opportunities. 11:00 a.m. – 3:00 p.m. at the Fargodome.

Thursday, September 28, **Scholarship and Awards Reception**. Join the College of Engineering as we acknowledge our scholarship recipients and donors, and recognize the accomplishments of outstanding faculty and staff. 3:00 - 4:30 p.m. Memorial Union Oċeti Śakȍwiŋ Ballroom. There is no cost to attend, but please RSVP by September 21.

Tuesday, October 10, **AI and the Humanities**. Anne Denton, NDSU professor of computer science, is slated to present "Artist or Geek: What is Artificial Intelligence and How Will It Impact Us?" The presentation will highlight the social implications of new AI development. Noon to 1:30 p.m. in the Memorial Union Hidatsa room.

Wednesday, October 18, **Conference on Computational Science**. The conference is the first of its kind, bringing together researchers from various research fields and aiming to showcase and promote computational-related research at NDSU and foster interdisciplinary collaboration. Please register here by October 4.

Thursday, October 26, **KFI Engineers Professor of Energy Stewardship Ceremony**. Please join us for a ceremony honoring Dr. Adam Gladden. 3:00 p.m. in the NDSU McGovern Alumni Center.

Wednesday, December 6, **Fall Senior Design Expo**. 11:00 a.m. – 2:00 p.m. in the Memorial Union Oċeti Śakȟowiŋ Ballroom.

NDSU HOMECOMING

Please mark your calendars for NDSU Homecoming 2023. You are invited to participate in the activities planned for the week of Sept. 25 – 30. NDSU Homecoming celebrates our academics and athletics in a great community. Major events are listed below. Visit the Homecoming webpage for the full list.

MONDAY, SEPTEMBER 25

1 – 3 p.m.
Ice Cream Social and Pep Fest
West of Memorial Union

TUESDAY, SEPTEMBER 26

10 a.m. – 6 p.m.
Serve with the Herd

THURSDAY, SEPTEMBER 28

7:30 p.m.
Blue Key Homecoming Show and Coronation
Festival Concert Hall
$10 admission or free with NDSU student ID.

FRIDAY, SEPTEMBER 29

10 a.m.
President David Cook's State of the University Address
Festival Concert Hall

4:30 – 8 p.m.

Bison Bash
Churchill Field
Kick off Homecoming weekend with inflatable games, a DJ, food trucks and activities for the whole family at the Bison Bash.

5:30 p.m.
Homecoming Parade
NDSU's Main Campus

Route begins on the corner of University and 17th Ave. N. See the Homecoming Parade page for more details.

SATURDAY, SEPTEMBER 30

1 p.m.
Bison football vs. South Dakota
Fargodome
6 p.m.
Bison volleyball vs. Omaha
Bentson Bunker Fieldhouse

HOMECOMING VOLUNTEERS

Homecoming is a time for the entire NDSU community to celebrate our contributions as a top research university while we enjoy successful athletics in a vibrant community. Staff, faculty and community members help events run smoothly.

Select your volunteer shift(s) here and visit the volunteer website here for more information. The Homecoming committee appreciates your willingness to volunteer and is thankful for the impact your support has on our campus.

BRAINSTEM VOLUNTEERS

Science, Technology, Engineering, and Math (STEM) occupations face a general lack of available workers to fill open positions, but also lack diversity.

Concordia, NDSU, and MSUM are collaborating to host the 6th annual BrainSTEM event for 7th graders this year. The event focuses on promoting diversity in STEM and reducing prejudice & bias by having workshop leaders from underrepresented groups in STEM. We are looking for your help to kick off the school year by inspiring students to explore STEM.

What:	**Interactive** STEM Workshops (three 50-minute sessions) *If you need ideas or supplies, we can help!*
Students:	7th Grade (from select schools)
Leaders:	Professors, college students & industry professionals who are underrepresented in STEM fields
Where:	Concordia College
When:	Wednesday, October 25th, 2023 *Tentative Schedule: 9:00AM – 1:30PM*

Please sign up with your workshop & contact info by **Friday, September 29th**

Students will be choosing which sessions to attend, so try to make your session name & short description appealing.

FUNDING OPPORTUNITIES

DoD: Pioneering Aerospace Capabilities, Engineering and Research (PACER)

The PACER BAA will enable study efforts on novel concepts, as well as research and development efforts to mature specific technologies to appropriate technology readiness levels (TRL) depending on end use. Efforts under this BAA are intended to further Air Force Research Lab/Aerospace Systems Directorate's (AFRL/RQ) mission in pioneering transformative aerospace technologies for the warfighter's decisive advantage.

Topics of Interest include:

High Speed Systems Technology Development
Aero Structures, Propulsion Technologies, Vehicle Integration and Analysis and Experimental Science

Power and Controls Technology Development and Demonstration
Autonomous Control Branch, Control Systems, Electrical Systems, Flight Systems Integration and Mechanical & Thermal Systems

Systems Analysis Technology Development
Science of Modeling, Simulation, and Analysis, Aerospace systems, and Digital Engineering and R&D Applications

Air-Breathing Engine Technology Development
Affordability, and Future Enabling Air Breathing Propulsion

Air-Vehicle Technologies Development and Demonstration
Aerodynamic Technologies, Airframe Structures, Multidisciplinary Design, Analysis and Optimization and Development and Demonstration of Advanced Military Air Vehicle Capabilities

Deadline: May 10, 2043

Research Development Travel and Conference Support Awards

RCA Research Development Travel and Conference Support Awards help defray expenses for faculty presenting at national conferences, either virtually or in-person. Tenured and tenure-track faculty, as well as professors of practice who have research as part of their appointments, are eligible to apply. The application requires confirmation of acceptance to present at the conference. *Learn more and apply >>*

RECENTLY AWARDED GRANTS

- Xinhua Jia (PI). North Dakota Water Resources Research Institute Graduate Fellowship Program Support from ND Department of Water Resources 2023-2024. $25,000 from the ND Department of Water Resources. 9/1/2023 - 8/31/2024.

RECENTLY SUBMITTED PROPOSALS

- Mijia Yang (Principal Investigator), Peyman Harirchi (Co-PI). Qualitative Relationship Between Increased Legal Loads and Reduced Bridge Service Life. $215,574 from the Iowa Department of Transportation. 1/1/2024 - 12/31/2025.
- Zhulu Lin (Principal Investigator), Miranda Ann Meehan (Co-PI), Jodi Delozier (Co-PI), Xiaoyu Feng (Co-PI). PARTNERSHIP: Managing Vegetated Buffer Strips to Reduce Phosphorus Contribution from Agricultural Land in Cold Climate Regions. $900,000 from the National Institute of Food & Agriculture. 3/1/2024 - 2/28/2027.
- Igathinathane Cannayen (Principal Investigator). Developing Remote Sensing and Image Processing Tools for North Dakota Agricultural and Rangeland Applications. $54,888 from the Agricultural Research Service. 9/1/2022 - 8/31/2027.
- Lokesh Karthik Narayanan (Principal Investigator), Chad A Ulven (Co-PI). SUSTAINABLE NATURAL FIBER-BASED PACKAGING FOR E-COMMERCE APPLICATION. $299,954 from the National Institute of Food & Agriculture. 1/1/2024 - 12/31/2025.
- Zhibin Lin (Principal Investigator), Long Jiang (Co-PI). PARTNERSHIP: Removal of Forever Chemicals from High Throughput Irrigation Water (RFC-HI): AI-Guided Design and Manufacturing of Novel Filtration. $800,000 from the National Institute of Food & Agriculture. 4/1/2024 - 3/31/2027.

- Yao Yu (Principal Investigator), Chau Le (Co-PI), Mijia Yang (Co-PI). Cost Benefit Analysis for Sustainable Energy Building Upgrades at Safety Rest Areas and Travel Information Centers. $152,070 from the MN Department of Transportation. 7/1/2024 - 6/30/2026.
- Zhili Gao (Principal Investigator). Freeway Corridor Economic Impact. $224,276 from the MN Department of Transportation. 7/1/2024 - 6/30/2026.
- Zhili Gao (Principal Investigator). Comparative analysis of grade-separated pedestrian infrastructure and at-grade treatments. $190,926 from the MN Department of Transportation. 7/1/2024 - 6/30/2026.
- Chau Le (Principal Investigator), Ranjit Prasad Godavarthy (Co-PI). Effectiveness of "Vehicle Noise Laws Enforced" Signage. $114,599 from the MN Department of Transportation. 7/1/2024 - 12/31/2025.
- Mijia Yang (Principal Investigator), Peyman Harirchi (Co-PI). Truck Size and Weight Impacts on Vehicle Miles Traveled. $142,738 from the MN Department of Transportation. 7/1/2024 - 6/30/2026.
- Jiale Xu (Principal Investigator). Low-Cost and Efficient Control of Onsite Pesticide Contamination by Far-UVC Light to Protect Farmer Health and Ecosystems 10.069 CRP. $74,067 from the Natural Resources Conservation Service. 9/1/2023 - 8/31/2026.
- Jiale Xu (Principal Investigator). Low-Cost and Efficient Control of Onsite Pesticide Contamination by Far-UVC Light to Protect Farmer Health and Ecosystems 10.924 CST. $15,000 from the Natural Resources Conservation Service. 9/1/2023 - 8/31/2026.
- Jiale Xu (Principal Investigator). Low-Cost and Efficient Control of Onsite Pesticide Contamination by Far-UVC Light to Protect Farmer Health and Ecosystems 10.912 EQP. $17,500 from the Natural Resources Conservation Service. 9/1/2023 - 8/31/2026.
- Xiangfa Wu (Principal Investigator). Development of an advanced fuel cell technologies laboratory to enhance the interdisciplinary education and research in clean energy generation, conversion and storage at NDSU. $75,000 from the NDSU Foundation. 11/01/2023 – 10/31/2025.
- Erik Klyver Hobbie (Principal Investigator), Onnolee Anne Nordstrom (Co-PI), Jessica Lynne Lattimer Vold (Co-PI). NRT: Sustainable Entrepreneurship and Materials Science (SEAMS). $3,000,000 from the National Science Foundation. 4/1/2024 - 3/31/2028.

RECENT PUBLICATIONS

For 2023, 189 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:

- Chen, Yiming, Yushen Fu, Mingyen Lee, Sumitha George, Yongpan Liu, Vijaykrishnan Narayanan, Huazhong Yang, and Xueqing Li. 2023. “FAST: A Fully-Concurrent Access SRAM Topology for High Row-Wise Parallelism Applications Based on Dynamic Shift Operations.” *IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS II-EXPRESS BRIEFS* 70 (4): 1605–9. https://doi.org/10.1109/TCSII.2022.3231589.
- Fu, Bohan, Weizhong Sun, and Zhao Zhang. 2023. “Optimal Sand-Paving Parameters Determination of an Innovatively Developed Automatic Maize Seeding Machine.” *AGRICULTURE-BASEL* 13 (8): 1538. https://doi.org/10.3390/agriculture13081538.
- Mumtaz, Rafia, Arslan Amin, Muhammad Ajmal Khan, Muhammad Daud Abdullah Asif, Zahid Anwar, and Muhammad Jawad Bashir. 2023. “Impact of Green Energy Transportation Systems on Urban Air Quality: A Predictive Analysis Using Spatiotemporal Deep Learning Techniques.” *ENERGIES* 16 (16): 6087. https://doi.org/10.3390/en16166087.
- Olatoye, Olugbemiga Emmanuel, Youjin Jang, Kwonsik Song, and Joseph Ahn. 2023. “Impact of COVID-19 on Social and Psychological Well-Being of Workers in Construction Projects: A Comparative Analysis of Managers and Laborers.” *BUILDINGS* 13 (8): 1902. https://doi.org/10.3390/buildings13081902.
- Roth, Katherine, and Kambiz Farahmand. 2023. “A Socio-Technical Study of Industry 4.0 and SMEs: Recent Insights from the Upper Midwest.” *Sustainability* 15 (16): 12559. https://doi.org/10.3390/su151612559.

- Sun, Weizhong, Bohan Fu, and Zhao Zhang. 2023. “Maize Nitrogen Grading Estimation Method Based on UAV Images and an Improved Shufflenet Network.” *AGRONOMY-BASEL* 13 (8): 1974. https://doi.org/10.3390/agronomy13081974.

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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