NDSU | COLLEGE OF ENGINEERING

COLLEGE HAPPENINGS

April 28, 2020

FROM THE DEAN

Remote Teaching

At our last faculty council meeting, I asked faculty to share, in a word, what their biggest challenges have been with remote teaching. The results were compiled into the word cloud shown here. Common themes include low participation and interaction, limited feedback, and difficulty with exams and assessment.

At both the faculty meeting and a subsequent staff meeting, we also discussed and ranked various scenarios for the Fall semester as a result of the COVID-19 pandemic:

1. Campus and classes will be open as normal with classes beginning on August 24 and proceed for the whole semester,

2. Face-to-face classes will be eliminated for the whole semester, with classes only meeting on-line,

3. Face-to-face classes will begin later than normal in the semester, or

4. Face-to-face classes will begin as normal, but will move to on-line when a spike in COVID-19 occurs.

A fifth scenario that we didn't discuss, but is also a possibility, is that we resume face-to-face classes in the fall, but we modify our operations to allow for social distancing.

My expectation is that scenarios one or five are most likely. However, by going through that exercise, it is clear that there is still significant uncertainty, as faculty and staff ranking of the four scenarios did not result in a clear consensus. When asked in our discussions what actions we can take now that would do the most to minimize harm across all scenarios, the most common comment was to prioritize professional development of our faculty in online teaching. As this semester comes to a close, it will be important to share what has worked well, and what hasn't, so that we can collectively work to improve our ability to engage with our students. Developing these skills will have a positive impact whether we are teaching on-line, face-to-face, or in some hybrid model.

One resource that I would like to share is ASEE's Resource Central (https://resources.asee.org/resource-central/). Some of the resources on this new site include: remote teaching, remote work, technology, virtual capstone, virtual labs, and research, among others. The site is continually updated to add new resources, leveraging the knowledge and expertise of

ASEE members, the broader engineering education community, and visitors contributing their own ideas. I encourage you to check it out.

Thank you for all you do for NDSU.

IN THE NEWS

[NDSU student body leaders elected](#)

[Program spotlight: Industrial and Manufacturing Engineering](#)

[Cordell Eaton Named Big 12 Wrestling Scholar-Athlete of the Year](#)

[Alumnus important contributor in coronavirus battle](#)

CONGRATULATIONS

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

REMOTE TEACHING TRAINING

Thursday, April 30th
Training: Open faculty
Description: Open forum focusing on the following topics:

- Blackboard Assignments
- Blackboard Tests
- Grade Center

Time: 2:30 p.m. -3:30 p.m.
[Please register here](#)

ANSWERING THE CALL: ENGINEERING INNOVATIONS DURING COVID-19 AND BEYOND

You're invited to a virtual seminar by College of Engineering alumnus Adam Reich on his role as the lead on Appareo Systems Ventilator Project to combat COVID-19.

Tuesday, April 28 from 5:00 – 6:00 p.m.

Zoom Link: https://ndsu.zoom.us/j/582291608 (Meeting ID: 582 291 608) - The link opens: 4:50 p.m.

FUNDING OPPORTUNITIES

DOE: AI and Machine Learning

The Department of Energy (DOE) Office of Science program in Advanced Scientific Computing Research (ASCR) has recently published two funding opportunities related to Artificial Intelligence (AI) and Machine Learning:

AI and Decision Support for Complex Systems: This program ([DE-FOA-0002321](#)) is interested in research applications to explore potentially high-impact approaches in the development and use of artificial intelligence and machine learning *in the context of computational decision support for complex systems.*

Required pre-application deadline: May 6, 2020; Application deadline: June 5, 2020

Scientific Machine Learning for Modeling and Simulations: This program ([DE-FOA-2319](#)) is interested in research applications to explore potentially high-impact approaches in the development and use of artificial intelligence and machine learning *for predictive scientific modeling and simulations*.

Required pre-application deadline: May 1, 2020; Application deadline: May 29, 2020

NSF / Amazon: Fairness in Artificial Intelligence

NSF and Amazon are partnering to jointly support computational research focused on fairness in AI, with the goal of contributing to trustworthy AI systems that are readily accepted and deployed to tackle grand challenges facing society (NSF 20-566). Specific topics of interest include, but are not limited to, transparency, explainability, accountability, potential adverse biases and effects, mitigation strategies, algorithmic advances, fairness objectives, validation of fairness, and advances in broad accessibility and utility. Funded projects will enable broadened acceptance of AI systems, helping the U.S. further capitalize on the potential of AI technologies. Although Amazon provides partial funding for this program, it will not play a role in the selection of proposals for award.

Advancing AI is a highly interdisciplinary endeavor drawing on fields such as computer science, information science, engineering, statistics, mathematics, cognitive science, and psychology. As such, NSF and Amazon expect these varied perspectives to be critical for the study of fairness in AI. NSF's ability to bring together multiple scientific disciplines uniquely positions the agency in this collaboration, while building AI that is fair and unbiased is an important aspect of Amazon's AI initiatives. This program supports the conduct of fundamental computer science research into theories, techniques, and methodologies that go well beyond today's capabilities and are motivated by challenges and requirements in real systems.

Deadline: July 13, 2020

NSF: Cyber-Physical Systems

Cyber-physical systems (CPS) are engineered systems that are built from, and depend upon, the seamless integration of computation and physical components. The CPS program (NSF 20-563) aims to develop the core research needed to engineer these complex CPS, some of which may also require dependable, high-confidence, or provable behaviors. Core research areas of the program include control, data analytics, and machine learning—including real-time learning for control, autonomy, design, Internet of Things (IoT), mixed initiatives including human-in- or human-on-the-loop, networking, privacy, real-time systems, safety, security, and verification. By abstracting from the particulars of specific systems and application domains, the CPS program seeks to reveal cross-cutting, fundamental scientific and engineering principles that underpin the integration of cyber and physical elements across all application domains. The program additionally supports the development of methods, tools, and hardware and software components based upon these cross-cutting principles, along with validation of the principles via prototypes and testbeds. This program also fosters a research community that is committed to advancing education and outreach in CPS and accelerating the transition of CPS research into the real world.

Deadlines vary by project size.

RECENTLY FUNDED GRANTS

- Om Prakash Yadav (PI). International Research Experience for Students (IRES) in Big Data Applications in Energy and Related Infrastructure. $128,076 from the National Science Foundation. 02/01/2020 – 12/31/2022.
- Chad A Ulven (PI). Emergency Exploratory Funds to Develop PPE for the COVID-19 Pandemic. $3,000 from the ND Corn Utilization Council. 04/01/2020 – 06/30/2020.

RECENTLY SUBMITTED PROPOSALS

- Xiangfa Wu (PI). IMEA Process for High-Throughout Continuous Manufacture of Multi-MW Electrolyzer MEAs. $859,060 from the Department of Energy. 10/01/2020 – 09/30/2023.
- Yao Yu (PI). Multi-Source Heat Pump Design Using Underground Thermal Energy Storage. $270,700 from the Iowa Department of Transportation. 07/01/2020 – 06/30/2023.
- Ravi Kiran Yellavajjala (PI). Mitigation of chloride-induced corrosion through chemisorption. $117,522 from the Iowa Department of Transportation. 07/01/2020 – 06/30/2022.

RECENT PUBLICATIONS

For 2020, 48 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:

- Darabi, Amir, and Fardad Azarmi. n.d. "Validation of Methods to Measure the Hardness and Elastic Modulus of Cold-Sprayed Al-ZN Composite Coatings." *Journal of Materials Engineering and Performance*. https://doi.org/10.1007/s11665-020-04769-y.

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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