

COLLEGE HAPPENINGS

October 30, 2018

FROM THE DEAN

Grand Challenges Scholars

Today I'm in Washington, D.C. at the National Academy of Engineering (NAE) for the 2018 Annual Meeting of the NAE Grand Challenges Scholars Program (GCSP) Network. The GCSP was developed in response to the [14 Grand Challenges](#) (or goals) for Engineering in the 21st Century that were identified by the NAE in 2008. Essentially, the GCSP is a response to the question, "If the 14 Grand Challenges were identified by the NAE as being of utmost importance to make the world better, shouldn't we be preparing students with the skills and mindset today to be able solve these challenges tomorrow?"

The GCSP has been implemented at more than 50 engineering schools around the world (including NDSU), and more are being selected by the NAE each year. At NDSU, we will be selectively recruiting our third cohort of freshman this year (nominally 20 scholars per year are selected to become part of the program), and students that complete the combined curricular, co-curricular and extracurricular program will have a special designation on their transcripts.

The NDSU Grand Challenges Scholars program has five components to ensure that each GCSP participant has developed competencies required by the NAE:

1. A research experience related to a grand challenge.
2. An interdisciplinary curriculum that prepares engineering students to work at the overlap with public policy, business, law, ethics, human behavior, risk, medicine and the sciences.
3. Entrepreneurship to prepare students to translate invention to innovation and to develop market ventures that scale to global solutions in the public interest.
4. A global dimension that develops the students' global perspectives necessary to address challenges that are inherently global as well as to lead innovation in a global economy.
5. Service learning for developing and deepening students' social consciousness and their motivation to bring their technical expertise to bear on societal problems.

These components are driven by the idea of the 21st century engineer, those well-rounded engineering leaders and innovators who put knowledge into practice to meet the challenges people and society will face in this century. Please consider being a part of the GCSP at NDSU. Additional research projects and mentors will be needed as we grow the program, and I encourage you to get in touch with the director of GCSP at NDSU, Achintya Bezbaruah, to learn how you can get involved.



IN THE NEWS

[NDSU teams excel at construction management competition](#)

[Engineering student awarded first Tribal Transportation Scholarship](#)

[Transportation institute awards scholarships to four College of Engineering students](#)

[Thriving through technology: Students compete in Bison BEST Robotics Competition](#)

[Local robotics competition sparks student interest in math and science](#)

[Breckenridge Robotics team to compete this weekend](#)

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

Wednesday, October 31st, **Promotion-to-Professor Session.** 11:30 a.m. to 1:00 p.m. **Memorial Union Arikara Room.** All faculty members and academic administrators are invited to attend. Registration is requested and can be [completed here](#).

Friday, November 2nd, **Faculty Seminar hosted by the College of Engineering.** *Approaches to Teaching Excellence – why it matters, and how we might get there, and the importance of inclusion* by **Dr. D. R. Raman**, Iowa State University Department of Agricultural and Biosystems Engineering. **11:00 a.m. Memorial Union Arikara Room.**

Monday, November 5th, **Department of Civil and Environmental Engineering Masters Defense.** “Carboxymethyl Cellulose Based Co-Polymer Method to Disperse Carbon Nanotubes in Smart Cementitious Materials” by Xinyuan Yang. 1:00 p.m. COE 106.

Friday, November 9th, **Department of Civil and Environmental Engineering Ph. D. Defense.** “Corrosion Risk Analysis for Coated Steel Pipelines” by Fodan Deng. 9:00 a.m. COE 106.

Tuesday, November 13th, **FORWARD Advocates will offer an Ally Workshop.** 9:30 a.m. to 11:30 a.m. in Room 368 of Barry Hall. Ally Workshops provide men with the knowledge, skills, and strategies to better promote gender equity. Interested men faculty and men postdoc/graduate students should [register here](#).

Thursday, November 15th, **Academic Leaders Series: Communication and Civility.** 3:15 – 4:30 p.m. MU Mandan Room. This program will cover strategies that increase trust and collegiality. Facilitated by **Kristine Paranica, NDSU Ombuds.**

Friday, November 16th, **Faculty Luncheon: Curricular Design** with Susan Ray-Degges, Rhonda Kitch, RaNelle Ingalls, and Charlene Wolf-Hall. General topics that will be discussed include: undergraduate programs, Gen Ed, unintentional institutional barriers, assessment, program review, and HLC accreditation. **11:30 a.m. – 1:00 p.m. MU Plains Ballroom.**

PROMOTION, TENURE AND EVALUATION FOR NEW FACULTY

This workshop will provide new faculty (*hired in the last two years*) with an overview of the promotion and tenure process (*including annual and third year review*) at NDSU as well as strategies to begin preparing their promotion and tenure portfolio. Offered on two different dates:

- Wednesday November 7, 3:00-4:00 pm, Rose, MU. [Register here](#)
- Thursday November 8, 3:30-4:30 pm, Mandan, MU. [Register here](#)

FACULTY AWARDS NOMINATIONS

Several deadlines are approaching for faculty awards nominations processed through the Office of the Provost. Nominations may be submitted by faculty, staff, students, alumni, unit administrators or deans. *Self-nominations will be accepted to ensure that there are multiple pathways to nomination.* Nomination materials should be sent by email to ndsu.provost@ndsu.edu.

The deadline for nominations for the [Faculty Lectureship Award](#) is **November 16, 2018**.

The deadline for nominations for the [Odney Excellence in Teaching Award](#), [Waldron Excellence in Research Award](#) and [Peltier Innovation in Teaching Award](#) is **December 21, 2018**.

For information on faculty awards please see [the awards page](#).

FUNDING OPPORTUNITIES

DOC/NIST: Engineering Laboratory Grants

The U.S. Department of Commerce / National Institute of Standards and Technology (NIST) Engineering Laboratory (EL) Grant Program provides financial assistance consistent with the EL's mission to support research in the following fields:

- machine tool and machining process metrology;
- advanced manufacturing;
- intelligent systems and information systems integration for applications in manufacturing;
- structures, construction metrology and automation;
- inorganic materials;
- polymeric materials;
- heating, ventilation, air conditioning, and refrigeration (HVAC & R) equipment performance;
- mechanical systems and controls;
- heat transfer and alternative energy systems;
- computer integrated building processes;
- indoor air quality and ventilation;
- earthquake risk reduction for buildings and infrastructure;
- smart grid;
- windstorm impact reduction;
- applied economics; and
- fire research.

Financial support may be provided for conferences, workshops, or other technical research meetings that are relevant to the mission of EL.

Applications accepted continuously

NSF/AFOSR: Emerging Engineering Frontiers

The National Science Foundation (NSF) and the Air Force Office of Scientific Research (AFOSR) are funding four-year awards via the Emerging Frontiers in Research and Innovation (EFRI) program for interdisciplinary teams of researchers to embark on rapidly advancing frontiers of fundamental engineering research. For this solicitation, they will consider proposals that aim to investigate emerging frontiers in one of the following two research areas:

- Chromatin and Epigenetic Engineering (CEE)
- Continuum, Compliant, and Configurable Soft Robotics Engineering (C3 SoRo).

The NSF Engineering directorate will coordinate with the Biological Sciences directorate and Computer and Information Science and Engineering directorate for this initiative. EFRI seeks proposals with transformative ideas that represent an opportunity for a significant shift in fundamental engineering knowledge with a strong potential for long term impact on national needs or a grand challenge. Further information about the EFRI program may be obtained by viewing the slides from the FY18 EFRI informational webinar.

Letters of Intent deadline: November 29, 2018

Preliminary proposals deadline: January 7, 2019

Full proposals deadline: April 25, 2019

RECENTLY SUBMITTED PROPOSALS

- Mijia Ying (PI). Controlling Bio-mineral Reaction in Bacteria Modified Concrete. \$332,949 from the National Science Foundation. 07/01/2019 – 06/30/2022.
- Long Jiang (PI). Developing High-Performance, Durable Concrete through Incorporating Soy Hull Derived Cellulose Fibers. \$29,378 from the ND Soybean Council. 07/01/2019 – 06/30/2020.
- Long Jiang (PI). Capping Material for Compacted Runway Crater Repairs. \$9,998 from Triton Systems, Inc. 02/02/2019 – 10/31/2019.
- Dilpreet Singh Bajwa (PI). Soyhulls - A fiber rich and functional material for hydromulch. \$35,450 from the ND Soybean Council. 07/01/2019 – 06/30/2020.
- Kenneth Hellevang (PI). Evaluating the Allowable Storage Time of Two Soybean Varieties at Two Moisture Levels in Typical North Dakota Weather. \$25,200 from the ND Soybean Council. 07/01/2019 – 06/30/2020.
- Kenneth Hellevang (PI). Impact of Drying and Storage Environment on Green and Semi-Green Soybeans Varieties. \$31,202 from the ND Soybean Council. 07/01/2019 – 06/30/2020.
- Xin Sun (PI). Life cycle monitoring using remote sensor, mobile application and artificial intelligence technologies in sustainable pig production. \$393,964 from the National Pork Board. 05/01/2019 – 04/30/2021.
- Nurun Nahar (PI). Evaluating Soybean Quality Stored in Commercial Grain Bags. \$21,046 from the ND Soybean Council. 01/01/2019 – 06/30/2019.

RECENT PUBLICATIONS

For 2018, 103 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:

- Kharub, Manjeet, Shah Limon, and Rajiv Kumar Sharma. 2018. "The Application of Quality Tools in Effective Implementation of HACCP: An Empirical Study of Food and Pharmaceutical Industries." *International Journal of Quality & Reliability Management* 35 (9): 1920–40. <https://doi.org/10.1108/IJQRM-11-2017-0236>.
- Li, Mingli, Guoqing Gui, Zhibin Lin, Long Jiang, Hong Pan, and Xingyu Wang. 2018. "Numerical Thermal Characterization and Performance Metrics of Building Envelopes Containing Phase Change Materials for Energy-Efficient Buildings." *Sustainability* 10 (8): 2657. <https://doi.org/10.3390/su10082657>.

- Roy, Debjit, Xinhua Jia, Dean D. Steele, and Dongqing Lin. 2018. “Development and Comparison of Soil Water Release Curves for Three Soils in the Red River Valley.” *Soil Science Society of America Journal* 82 (3): 568–77. <https://doi.org/10.2136/sssaj2017.09.0324>.
- Sunoj, S., C. Igathinathane, N. Saliendra, J. Hendrickson, and D. Archer. 2018. “Color Calibration of Digital Images for Agriculture and Other Applications.” *ISPRS Journal of Photogrammetry and Remote Sensing* 146 (December): 221–34. <https://doi.org/10.1016/j.isprsjprs.2018.09.015>.
- Yatigala, Nikushi S., Dilpreet S. Bajwa, and Sreekala G. Bajwa. 2018. “Compatibilization Improves Performance of Biodegradable Biopolymer Composites Without Affecting UV Weathering Characteristics.” *Journal of Polymers and the Environment* 26 (11): 4188–4200. <https://doi.org/10.1007/s10924-018-1291-7>.
- Pan, Zhihui, Ying Huang, and Hai Xiao. 2018. “Multi-Parameter Sensing Device to Detect Liquid Layers Using Long-Period Fiber Gratings.” *Sensors* 18 (9): 3094. <https://doi.org/10.3390/s18093094>.

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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