

COLLEGE HAPPENINGS

January 21, 2020

FROM THE DEAN

Consider Using Formative Assessment in Your Classes

To our teaching faculty, within the next month, I encourage you to get feedback from your students about how your courses are going—a formative evaluation. Formative evaluations are assessments performed during the course aimed at eliciting comments from students so that in-course corrections can be made. They can be as simple as asking students to respond anonymously to questions on a notecard, chatting with students informally, or meeting with representatives from the class. Having a formative evaluation relatively early in the semester, and then responding to that feedback by making some adjustments to the class can help class rapport since the students can see that their feedback makes a difference and that the professor cares.

One formative assessment tool that I’ve found particularly helpful in the past is what’s called a modified PLUS-DELTA classroom assessment technique.¹ With this tool, about ten minutes before the end of a class, ask the students to take out a sheet of paper and to separate it into four quadrants. In the top left quadrant, ask the students to answer the questions “What is helping me to learn in this class?”. In the top right, ask the students to list “What changes are needed in this course to improve learning?” In the bottom left quadrant, the students respond to the question “What am I doing to improve my learning in this course?”. Finally, in the bottom right quadrant, ask the students to identify “What do I need to do to improve my learning in this course?”. The students turn in their assessment at the end of class and the instructor summarizes the comments into a master document which is reported back to the students at the beginning of the next class. At that time, discuss the results of the assessment and identify some things that can be changed in the class to address some of the common themes from the comments. Then challenge the students to take responsibility for their learning by addressing those items identified in the bottom right corner. An example table with student comments from a course I’ve taught in the past is listed below.

PLUS	DELTA
<p><u>What is helping me to learn in this class?</u></p> <ul style="list-style-type: none"> • Online agendas provide good reminders of what is expected • Demonstrations • Pace of the class • Mix of discussion and note taking • Lecture and book are similar which ties it together • Reading assignments with quizzes help to stay on schedule • Challenging tests and quizzes 	<p><u>What changes are needed in this course to improve learning?</u></p> <ul style="list-style-type: none"> • More organic chemistry review for those who haven’t had it • More examples (not out of text) • Posting notes online for a class the student might miss • More interactive lectures • HW sometimes covers material far outside lecture or book resource

<p><u>What am I doing to improve my learning in this course?</u></p> <ul style="list-style-type: none"> • Taking good notes • Reading the assigned readings • HW help with friends • Reworking in-class assignments • Scheduling a ½-hour study time everyday 	<p><u>What do I need to do to improve my learning in this course?</u></p> <ul style="list-style-type: none"> • Come to office hours to go over and review topics covered • Keep up with the reading before class • Get more sleep • Look over notes regularly • Work with other students • Do more reviewing instead of just before the exam
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What I like about this assessment technique, is that it lets you know what is working well (the PLUS column on the left) and what is not working and needs to be changed (the DELTA column on the right) by both the instructor and the student. In addition to providing the instructor feedback on how to change the course (the top row), I also like that the tool causes the students to consider their own responsibility to learning in the course (the bottom row).



¹ This formative assessment tool is adapted from Helminski, L. & Koberna, S. (1995). Total quality in instruction: A systems approach. In H. V. Roberts (Ed.), Academic initiatives in total quality for higher education (pp309-362). Milwaukee, WI: ASQC Quality Press.

IN THE NEWS

[NDSU researcher creates value from agricultural byproducts](#)

[NDSU to host FIRST LEGO League tournament](#)

[NDSU and ND Air National Guard announce partnership for student success](#)

CONGRATULATIONS

Dharmakeerthi Nawarathna, assistant professor in the **Department of Electrical and Computer Engineering**, has received a **National Science Foundation CAREER Award**. The award is given to scholars who have the potential to serve as academic role models in research and education, it's considered the agency's most prestigious award in support of early-career faculty.

Sulaymon Eshkabilov, a visiting professor in the **Department of Agricultural and Biosystems Engineering**, recently had his book ***Beginning MATLAB and Simulink*** published.

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, January 23, **Green Focus ND**. The 2020 North Dakota U.S. Green Building Council Annual Conference will be held from 2:00 – 5:00 p.m. at Renaissance Hall. [Register Here](#).

Wednesday, January 29, **Intellectual Leadership: Renewing the Role of the Tenured Full Professor**. 12:30 – 2:00 p.m. in the Memorial Union Arikara Room. The presentation is part of the [Academic Leaders Series](#).

Wednesday, January 29, **Community of Respect Training Module 2: Redefining Diversity**. 1:30-3:30 p.m. in the Meadow Lark Room of the Memorial Union. [Register Here](#).

Wednesday, January 29, **NDSU Day of Honor memorial service**. 2:30 p.m. in the Memorial Union Plains Room. If you know of a member of our campus community who has passed away in 2019, please visit the [Day of Honor webpage](#) to complete a submission form. Submission forms will be accepted through Friday, January 24, 2020.

Friday, January 31, **College of Engineering Staff Luncheon**. 11:30 a.m. – 1:30 p.m. in Dolve 117. Here is the [Sign Up Genius link](#) to RSVP for the lunch and optional team building event, as well as the option to sign up to bring a chili dish (max of 5 total) and/or other sides/condiments/drinks/deserts/serving ware, etc.

Wednesday, February 5, **2nd Annual Student Success Summit**. All faculty and staff, interested in discussing, collaborating and learning more about how we can help our students succeed are encouraged to attend. 8:00 a.m. – 12:00 p.m. in the Memorial Union. [Click here to register](#).

Tuesday, February 11, **Cultivating Inclusion In The Workplace**. 4:30 – 6:00 p.m. at the FARGODOME. [Registration and Event Details](#).

AWARD NOMINATIONS

Nomination deadlines are approaching for several faculty awards processed through the Office of the Provost including the [Waldron Excellence in Research Award](#), the [Peltier Innovation in Teaching Award](#), the [Excellence in Mentoring Award](#), and the [Chamber of Commerce NDSU Distinguished Faculty Service Award](#).

Nominations may be submitted by faculty, staff, students, alumni, and administrators to ndsu.provost@ndsu.edu. The Faculty Awards and Recognition Committee will review all nominations and select finalists for each award based upon the candidate's nomination materials after the stated deadline. Recipients of these awards are expected to be NDSU employees at the time of the Celebration of Faculty Excellence ceremony.

BLACKBOARD AND YUJA TRAINING

Information Technology has free video tutorials, workshops and a self-paced Blackboard course designed to help you learn how to use Blackboard and YuJa video in your courses this semester.

[Blackboard Quick Start Video Tutorials – NDSU Blackboard for Faculty YouTube playlist](#)

- 12 short videos covering the Blackboard basics you need to know

[Hands-on Workshops – Register Now!](#)

- Blackboard 9.1: Make Grade Center Work for You! – Wednesday, January 22: 2:30 – 4:00 PM
- Get Started With YuJa Video! – Friday, January 24: 9:00 – 10:30 AM
- Blackboard 9.1: Tests and Surveys – Thursday, January 30: 1:30 – 3:00 PM

[NDSU Grade Center Tutorial](#)

- Don't have time to attend a hands-on workshop? Enroll in this self-paced tutorial in Blackboard (**You must be logged into Blackboard before clicking this enrollment link**)

Contact the IT Help Desk at 701-231-8685 or ndsuhelpdesk@ndsuhelpdesk.ndsu.edu if you have questions or need assistance.

PROPOSAL DEVELOPMENT PROGRAM

The purpose of the Proposal Development Program is to provide a professional development opportunity for NDSU faculty new to proposal writing or those seeking a refresher to hone proposal writing skills and knowledge in funding agency opportunities.

Spring 2020 Sessions

Memorial Union Badlands Room | 12:30pm-1:30pm

- January 28 - Peer Review (*Rescheduled from December*)
- February 11 - NSF CAREER Program
- February 25 - NSF Broader Impacts and Intellectual Merit
- March 10 - Meeting Expectations of Funding Agencies: Foundations and NIH
- March 31 - Meeting Expectations of Funding Agencies: USDA
- April 14 - Developing Collaborations

An experienced grant consultant, faculty, and research support staff will lead the sessions. [Register](#) soon to reserve your spot.

FUNDING OPPORTUNITIES

NSF: Spectrum and Wireless Innovation Enabled by Future Technologies

The National Science Foundation's Directorates for Engineering (ENG), Computer and Information Science and Engineering (CISE), Mathematical and Physical Sciences (MPS), and Geosciences (GEO) are coordinating efforts to identify new concepts and ideas on Spectrum and Wireless Innovation enabled by Future Technologies ([SWIFT / NSF 20-537](#)). A key aspect of this new solicitation is its focus on effective spectrum utilization and/or coexistence techniques, especially with passive uses, which have received less attention from researchers.

Breakthrough innovations are sought on both the wireless communication hardware and the algorithmic/protocol fronts through synergistic teamwork. The goal of these research projects may be the creation of new technology or significant enhancements to existing wireless infrastructure, with an aim to benefit society by improving spectrum utilization, beyond mere spectrum efficiency. The SWIFT program seeks to fund collaborative team research that transcends the traditional boundaries of individual disciplines.

Proposal Deadline: April 3, 2020

USDA-NIFA: Women and Minorities in STEM Fields

The purpose of the USDA National Institute of Food and Agriculture (NIFA) [Women and Minorities in Science, Technology, Engineering, and Mathematics Fields Program \(WAMS\)](#) is to support research, education/teaching, and extension projects that increase participation by women and underrepresented minorities from rural areas in STEM. NIFA intends this program to address educational needs within broadly defined areas of food, agriculture, natural resources, and human (FANH) sciences. Applications recommended for funding must highlight and emphasize the development of a competent and qualified workforce in the FAHN sciences. WAMS-funded projects improve the economic health and viability of rural communities by developing research and extension initiatives that focus on new and emerging employment opportunities in STEM occupations. Projects that contribute to the economic viability of rural communities are also encouraged.

Proposal Deadline: February 24, 2020

RECENTLY FUNDED GRANTS

- Dharmakeerthi Nawarathna (PI). CAREER: Ultrafast molecular separation and integrated near-field light-metal-fluorophore interactions for biomarker detection at point-of care. \$433,735 from the National Science Foundation. 02/01/2020 – 01/31/2025.
- Yao Yu (PI). A Survey Study on the Real Needs of Low-income North Dakota Households. \$10,000 from the Consensus Council, Inc. 09/01/2018 – 06/01/2019.
- Yao Yu (PI), Zhili Gao (CPI). Needs Assessment of Low-Income North Dakota Individuals and Families. \$6,000 from The Consensus Council, Inc. 09/01/2019 – 12/31/2019.
- David Grewell (PI). IUCRC/UIDP ISU Fund Relocation. \$62,205 from the National Science Foundation. 06/15/2019 – 08/15/2019.
- Robert Allan Sailer (PI). Design and prototyping of cooling devices using CO₂ as a refrigerant for transition to production. \$300,000 from the ND Department of Commerce. 11/01/2019 – 06/30/2021.
- Xinhua Jia (PI). Using UAS to evaluate a drainage system and develop educational materials. \$14,350 from the National Institute of Food and Agriculture. 12/01/2019 – 12/31/2020.
- Ghodrat Karami (PI). Design of a New NASA Rover for 2030 Rover Challenge Competition - ME Senior Design Project. \$8,000 from the University of North Dakota. 12/01/2019 – 05/30/2020.

RECENTLY SUBMITTED PROPOSALS

- Danling Wang (PI), Qifeng Zhang (CPI). Innovative Sensing Technology Based on New 3D MXene Nanosheets and 1D Nanowires Nanocomposite For Food Safety Monitoring in Space. \$89,720 from the National Aeronautics and Space Administration. 06/01/2020 – 07/01/2021.
- Qifeng Zhang (PI). Synthesis of LiPON solid-state electrolyte through reactive ion etching and the fabrication of bulk-type solid-state lithium ion battery. \$89,750 from the National Aeronautics and Space Administration. 07/01/2020 – 06/30/2021.
- Muhammad Z Malik (PI). Automated Architecture Repair and Synthesis of Deep Neural Networks. \$89,749 from the National Aeronautics and Space Administration. 04/01/2020 – 03/31/2021.
- Beena D Ajmera (PI). Seed Funding: Quantifying Strength Degradation in Overconsolidated Soils. \$6,000 from the National Science Foundation. 02/01/2020 – 05/31/2020.
- Benjamin Davis Braaten (PI), Ewumbua Monono (CPI), Xin Sun (CPI). Development of an RF Sensing Platform for Grain Detection - Phase 3. \$138,714 from John Deere & Company. 01/20/2020 – 12/31/2020.
- Huojun Yang (PI). Improving STEM education through co-curricular competition preparation. \$300,000 from the National Science Foundation. 07/16/2020 – 05/31/2023.

RECENT PUBLICATIONS

For 2020, 10 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:

- Bridgelall, Raj, Leonard A. Chia, Bhavana Bhardwaj, Pan Lu, Denver D. Tolliver, and Neeraj Dhingra. 2020. "Enhancement of Signals from Connected Vehicles to Detect Roadway and Railway Anomalies." *Measurement Science and Technology* 31 (3). <https://doi.org/10.1088/1361-6501/ab5b54>.
- Cao, Qi, Huan Li, and Zhibin Lin. 2020. "Effect of Active Confinement on Compressive Behavior of Glass Fiber-Reinforced Polymer-Confined Expansive Concrete under Axial Cyclic Loading." *ACI Structural Journal* 117 (1): 207–16. <https://doi.org/10.14359/51718074>.

- Gudagunti, Fleming Dackson, Vidura Jayasooriya, Sharmin Afrose, Dharmakeerthi Nawarathna, and Ivan T. Lima. 2019. "Biosensor for the Characterization of Gene Expression in Cells." *Chemosensors* 7 (4): 60. <https://doi.org/10.3390/chemosensors7040060>.
- Shabani, Afshin, Xiaodong Zhang, Xuefeng Chu, Timothy P. Dodd, and Haochi Zheng. n.d. "Mitigating Impact of Devils Lake Flooding on the Sheyenne River Sulfate Concentration." *Journal of the American Water Resources Association*. <https://doi.org/10.1111/1752-1688.12825>.
- Xu, Wen-Sheng, and Wenjie Xia. n.d. "Energy Renormalization for Coarse-Graining Polymers with Different Fragilities: Predictions from the Generalized Entropy Theory." *Macromolecular Theory and Simulations*, 1900051. <https://doi.org/10.1002/mats.201900051>.
- Zhang, Fan, Xuxin Tang, Xiu Li, Samee U. Khan, and Zhijiang Li. 2019. "Quantifying Cloud Elasticity with Container-Based Autoscaling." *Future Generation Computer Systems-the International Journal of Escience* 98 (September): 672–81. <https://doi.org/10.1016/j.future.2018.09.009>.

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.

